

PROFILES

The Magazine for Kaypro Users
December 1986/January 1987

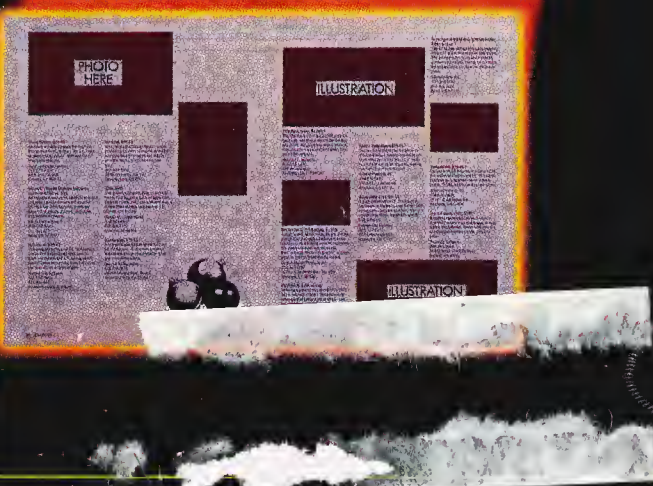
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SCS-Draw is an easy-to-use drawing program with powerful capabilities like pattern filling, multi-screen drawings, variable-size printing, and file merge. With SCS-Draw, you can draw detailed images on your Kaypro screen and print them on your dot-matrix or daisywheel printer.

SCS-Draw comes with a library of sample images (like the Santa Claus shown here) and a 96-page illustrated user's guide that gives tips on how to draw and print everything from Christmas cards to bar charts.

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SCS-Draw is available for all '84, '85 and '86 Kaypro CPM computers.

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Now you can use your favorite PrintMaster images in your SCS-Draw drawings. The Image Extractor converts PrintMaster images to SCS-Draw image libraries, quickly and easily. Then you can use the full power of SCS-Draw to modify images, combine them with other drawings, or print them with SCS-Draw's versatile printing options.

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Profiles, March 1986

"Extremely easy to use... excellent for creating logos, bulletins and newsletters."

Clergy KUG, July 1986

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MicroTimes, August 1986



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SCS-Draw can be used with dot-matrix printers from Epson, Okidata, Star Gemini, C. Itoh, Panasonic, and IBM. Daisywheel printers from Kaypro, NEC, Juki, Brother, and Diablo are also supported.

S E C O N D · C I T Y · S O F T W A R E

TurboROM: Ver. 3.4 just released: Provides substantial improvements to your CP/M Kaypro computer. Adds many new features to your computer. Compare the TurboROM with the competition, you can't get more performance for your money with any other product.

The competition - P=partial feature M=circuit modifications required

Advent TurboROM features

- P • 2 X to 4 X speed on all disk writes (both hard and floppy)
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- Up to 3.25K more program area on K10s
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- P • Ram disk support built in (up to 2048K)
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- ZCPR1 included - Supports ZCPR2 and ZCPR3
- P • Advanced features list includes fine tuning floppy and hard disk performance
- P • Full set of utility software provided
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- Compatible with Uniform, Media Master, Fast Back, etc.
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RAM Disk Utility disk: Utility to modify block size, number of directory entries and reserved tracks of the Advent RAM Disk with TurboROM installed. \$15.00

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- Software driver may be loaded above the system to conserve memory
- Can be assigned to any drive name (A: thru P:)
- Auto loads the system if assigned as drive A:
- Mounts inside the Kaypro
- Works on all CP/M Kaypro computers - Nothing extra to buy
- Expandable to include TurboROM
- Expandable to include Real Time Clock/Calendar
- Expandable to include hard disks
- High reliability - Built to our proven high standards

Speed Comparison at 4 MHz - Times measured in seconds.

Function	Floppy	MicroSphere	SWP	Advent
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Write 64K file	55.65	3.25	2.93	1.52

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512K RAM Disk	\$389.95	256K Expansion Ram	\$40.00
768K RAM Disk	\$429.95	Real Time Clock	\$30.00
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- User-selectable block size for each logical drive
- Expandable to include RAM Disk
- Expandable to include Real Time Clock / Calendar
- Supports all features of our TurboROM
- Includes the Advent hard disk formatter software
- Advanced features include complete user definable disk formatting--
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Floppy Disk Kaypro Systems (Internal): Add a single 11, 22 or 34 Mb drive to any Kaypro II, 4, 2X, 1 etc.

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PROFILES

The Magazine for Kaypro Users • Volume 4, Number 6 • December 1986/January 1987

FEATURES

Cold Type 22 Gets Hot

by *Ted Silveira*
An overview of
desktop publishing



Cold Type 22

A Screen 33 Control Toolbox

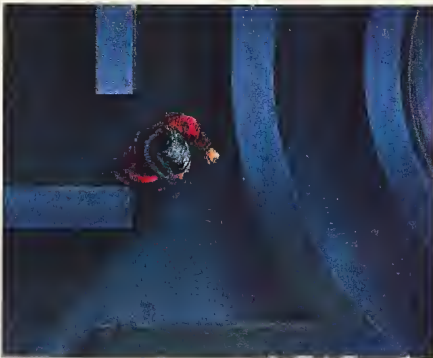
by *Daniel L. Schuster*
A tutorial on using
video attributes



DDT 37

The ABCs 37 of DDT

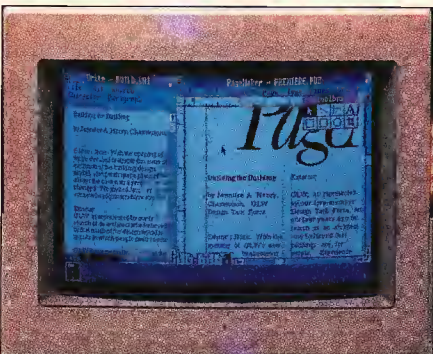
by *Michael Schwager*
How to use this tool
for patching programs



KUG ROS 50

Planning a 46 Program With Flowcharts

by *Jerry Houston*
An alternative to
pseudocode



Accessing 50 KUG ROS

by *James Durkin*
A navigational aid for
users of Kaypro's BBS

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On the cover:

Desktop publishing is a topic that everyone is talking about. It holds tremendous possibilities for the desk-bound publisher — typesetting, page layout, design, copyfitting and more. Photographer R.S. Powers captures the energy surrounding this hot new topic on our cover. And Ted Silveira offers an overview of the subject in our feature article "Cold Type Gets Hot."

Editors' Notes

For anyone who missed last month's "Editors' Notes," we'd like to point out once again that starting with this issue, there will be two versions of each issue of the magazine—one for owners of CP/M machines and the other for owners of DOS machines.

Some articles appear in both versions. This month they include:

- An overview of desktop publishing, by Ted Silveira. If you need to produce newsletters, reports, brochures or similar material on a regular basis, investing in a desktop publishing system could be worthwhile. This article will tell you what's available for both operating systems.

- Part 4 of the programming series, by Jerry Houston. This article explains the fundamentals of using flowcharts in program planning.

- A guide for beginners on navigating the Kaypro bulletin board, KUG ROS, by Jim Durkin.

For our CP/M audience, we have "The ABCs of DDT," by Michael Schwager, which explains how to use DDT as a patching tool, and a collection of screen control tools for programmers, presented by Daniel Schuster.

In the magazine's DOS version, you'll find T.F. Chiang's overview of three of Borland International's products for programmers: the Editor Toolbox, Database Toolbox, and Gameworks.

In addition, Don and Sharyn Conkey offer an MS-DOS tutorial for those who've mastered the basics and are ready to learn more sophisticated tricks.

Terian Tyre
Diane Ingalls

About PROFILES

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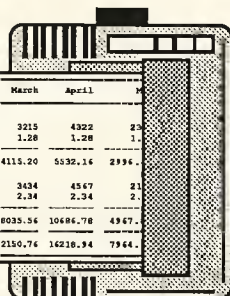
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Correction

In "A Program to Rename DOS Directories" (October 1986), two errors appeared in Figure 1A on page 46 and one error appeared in the program listing on page 48.

The errors in Figure 1A appear in the "Byte Offset" column: 8-11 should have been 8-10, and 28-32 should have been 28-31.

The error in the program listing occurs in line 56. In this line, a closing single quote mark is missing. The line should be `norm_filename db ' followed by 11 spaces and a closing single quote`. If you make this change, the code will compile and run. *PROFILES* regrets the error.

Perfect Writer

I received my October issue of *PROFILES*, scanned the contents page, and went immediately to the article by Robert J. Schechter, "Academic Writing with Perfect Writer." I congratulate both Schechter and *PROFILES* for a concise, insightful, worthwhile, and understandable article. It was just what the doctor ordered!

I would make one addition regarding proper page numbering. Most academic medical journals require a title page, a page that is typically *not* numbered. The numbering of the document traditionally begins—as page 1—on the second *printed* page. How to *un-number* the title page but restore the correct numbering, namely "1," to the second page of the document?

Kristin A. Farry provides the following simple, straightforward solution to this vexing problem in her book, *Perfectly Serious . . . an in-depth look at Perfect Writer*.

1. Turn off Perfect Writer's page-footing. `@PAGEFOOTING()`

2. Set up title page text and design commands.

3. Initialize Perfect Writer's page counter. `@SET(PAGE = 0)`

4. Restore page numbering for remainder of document. `@PAGE-FOOTING[CENTER = "@VALUE-`

`(PAGE)"]`

5. Indicate page break between title page and remainder of document. `@NEWPAGE`

6. Set up design commands for remainder of document.

This scheme will produce an *unnumbered* title page followed by correctly numbered document pages. It is essential that *all* the commands be included, in roughly the order given. Because of the manner in which Perfect Writer's page counter operates (it counts pages *formatted/printed*, regardless of whether all of these pages are numbered), after suppressing page numbering for the single title page, it is necessary to initialize the page counter to 0 (not 1) with the SET command. In *all* cases, the `@SET` and `@PAGE-FOOTING` commands (3 and 4 above) *must* precede the page break.

Herbert J. Smith
Dallas, Texas

After so many articles on how to patch WordStar, thank you for Robert Schechter's article on Perfect Writer. I have not yet had to double space my endnotes, but I was wondering how I would cross that bridge. Now I know; thanks. You have restored my shaken faith in *PROFILES*.

After considering the article and doing some experimentation, I concluded that if the endspace has been increased using `PFCONFIG`, and the repeating or combination of endnote numbers is not needed, there is an easier way to use his ideas.

When the article or chapter is ready for publication, format the document (named B:ESSAY.MSS, for example) using option D for a different device (file) and O to rename the output (B:ESSAY1.MSS). Edit ESSAY1.MSS and move the endnotes into a third file (B:ESSAY2.MSS) and alter them to fit any publisher's style sheet. Then return to ESSAY.MSS and place a

`@NEWPAGE` command, an `@INCLUDE(B:ESSAY2.MSS)` command, and another `@NEWPAGE` command at the end. Format and print. The edited endnotes will be double spaced; the original endnotes will be at the very end of the printout. Incidentally, this also eliminates the annoying 300-character limitation on the length of individual notes.

Daniel C. Vogt
Jackson, Mississippi

In the black

The article by David Kutzler ("Staying in the Black," September 1986) was excellent. How about expanding a bit on an article similar to it geared for tracking mutual fund performance using CalcStar?

Articles on how to evaluate insurance proposals using the bundled software might be useful. Dividend and capital gain reinvestment for the above could also be addressed. I'm aware that this is quite complex and more than most of your readers could handle.

A series on managing your money with the bundled software would be welcomed. [*PROFILES* is] an excellent magazine.

Frank E. McKee
Arlington, Texas

This is to thank you and David Kutzler for the article on tracking mutual funds. I don't have Multiplan, so I tried it on Perfect Calc, but some of the formulas were too long. So I adapted it to my wife's Apple IIc and AppleWorks, and it runs beautifully. It really opened my eyes to the vast difference in performance of funds.

Kutzler's program is for a fund where only one purchase is made. What I also need is a program that works just as nicely for a fund with several purchases and several sales. Can Kutzler or anyone else help?

Also, belated thanks for Ted Silveira's article last year on patching

WordStar. With his help, I finally got WordStar to do what I want it to!

Eugene S. Patton
Morgantown, Pennsylvania

We'll take these suggestions and requests into account in planning future articles.

A plea for help with C

I am delighted to see that *PROFILES* is carrying a series on programming. I have been interested in programming for quite some time and plan to develop software I hope to sell to the general public.

I have been learning BASIC and have become proficient enough in it to know that it is not the language that I want to rely on for programming. After considerable research into different languages (inspired mainly by articles in *PROFILES*), I chose C.

I am in the early stages of learning C now. My biggest problem is that unlike BASIC, the language provides no input/output facilities. Being concerned about portability, I am hesitant to use the MS-DOS system calls. I understand that there is a library of standard I/O functions, but I am a little foggy on the use of them. For example, how do you clear the screen or change the location of the cursor? Do you have to write your own functions to do these types of things? Some explanation of the I/O characteristics of C would be extremely useful to old BASIC users.

When I finally decided to dive into C, I had no idea of what to look for in a compiler, so I purchased Toolworks C, because it was cheap and needed no assembler. Some guidance on what to look for in a compiler would be helpful to the average hacker like me.

Good luck with your series. I am looking forward to reading it.

Raymond O'Brien
Conrad, Montana

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writer Alan Winston, who is working on a second article on C for *PROFILES*. He may be able to address some of your questions. Meanwhile, you may find his first article ("Oh Say Can You C," October 1985) informative.

Buggy Filer

I noticed with interest that there was recently an article in the magazine about Perfect Filer ("A Whirlwind Tour of Perfect Filer," August 1986). It's worth pointing out, however, that Perfect Filer—at least, some versions (like the one I got with my original Kaypro II)—has some nasty, nasty bugs in it that were never fixed. One is that it doesn't have sufficient error-checking to advise you when the disk is full, and as PeopleTalk's how-to book for the first-time Kaypro user put it, Filer will simply write data down the hole in the center of the disk until Armageddon. Thus, you have to be extremely careful about the size of your data file. Naturally, you'd want to be careful about it in any case, but *that* lack of error-checking is bizarre, to say the least.

The worst bug in my experience was the one whereby Filer would duplicate data, then not allow you access to it so you could erase it. In other cases it made *non*-duplicated data unavailable for manipulation of any kind. I have no idea what, in technical terms, these bugs are. To me they were just bugs, and serious enough ones that I had to abandon Filer altogether and re-do everything using another data base system entirely. It was a monstrous nuisance.

Too bad! Despite some klutzy things about the syntax required to make up list formats, I liked it. I hope for the sake of other Filer users that not all versions had the kinds of problems mine did.

Mike Arst
Seattle, Washington

Seventh heaven

I wish to compliment you on a fine

publication. It is attractive, informative, and educational.

Since I am a freelance technical writer, I have begun in recent years to make considerable use of a personal computer as a word processor. In July of this year, I decided it was time for some new hardware and purchased a Kaypro PC and Epson printer from my local dealer.

Included with my new Kaypro was the May issue of *PROFILES*. After setting up the computer and booting it (of course!), I read the magazine from cover to cover. Of particular interest was Durwin Schmitt's article, "Run Silent, Run Fast." Although aimed at users of 8-bit CP/M machines, it had some applicability to my own needs, and so I boosted my machine's RAM from the stock 256K up to 640K (with 128K left over for use by the RAM disk, too).

Then, in the August issue, I read Marshall Moseley's article, "Ghosts in the Machine." This inspired me to do some innovating with batch files.

I now run WordStar on a RAM disk. My customized WordStar, along with three special batch files, goes in drive A; my work disk goes in drive B. The machine wakes up, shoves my WordStar executable and overlay files and two other batch files onto drive C—the RAM disk. Then (still using the first batch file), it moves my working files *and* backups to drive C.

Running WordStar on a RAM disk must be experienced; it cannot be described.

With batch files to "save" (which writes the working and backup files back to drive B and returns to WordStar) and to "quit" (which does the same but defaults back to drive A), I am in seventh heaven.

Russell B. Martin
Kansas City, Missouri

Hard to learn?

Three cheers and a tip of the hat to Dave Karp (Letters, October 1986). My wife bought a Kaypro 2X in

1984 and we have the same problem. User group meetings are too far away to attend, and too many questions arise that manuals do not answer.

The store where we bought the system has new sales people, and they are not as well-versed as [those who worked there] when we made the purchase.

I feel the machine itself is "user-friendly," but the writers of the manuals seem to be thinking too far ahead of what they are writing.

Looking forward to simplicity, and an 800 number to call for help!

J. B. Smith
Flemington, New Jersey

Regarding Mr. Karp's letter in the October *PROFILES*: Two years ago this month, at the age of 66 very ripe years, I bought the Kaypro 2X Business Pak. I purchased the equipment because I am a sucker for anything that will put words on paper, and justified the expense to myself by deciding to use it also in my volunteer job as parish recorder for my church.

To get the fullest use out of the equipment meant having to learn all of the programs—WordStar, DataStar, CalcStar, and ReportStar especially. And so, buckling down to studying and practicing with the various manuals open beside the computer, I reached the point where I was producing membership records, reports, correspondence, bulletins, and financial reports within the year. It's not only of value to the church in its day-to-day administration, but also a lot of fun for me. I thought briefly of buying one of those special programs for church administration, but decided it would be more enjoyable to design my own files using the bundled software. Also, it was 100 percent cheaper to use what I had on hand.

I assume Mr. Karp is at least as intelligent as I am; I wonder why he is stuck at WordStar and The Word Plus? I suspect it is because he has

allowed himself to be buffaloes by computerdom's forbidding language and is suffering from what shrinks call a block. Actually, the manuals, if taken step by step, are not that difficult to understand, so all he need do is knuckle down to it and hit those books! The thrill of finally getting your Kaypro to sit up and beg more than compensates for the work of learning to use it.

Roy A. Johnson
Tallahassee, Florida

Preserve the magic

Although I've been subscribing to *PROFILES* since two months after its inception, I almost didn't renew my subscription this time. It's not that you aren't still doing a fine job—it's just that my needs have changed. The factor that convinced me to stay with you, at least one more year, was the relaxed and personal tone that *PROFILES* has managed to maintain.

I really appreciate the down-to-earth style of most of your writers. I have especially enjoyed the work of Terian Tyre, Ted Silveira, David Gerrold, David Thompson, and Tyler Sperry over the past three years. Ted Silveira's "WordStar Deluxe" stands out as one of the most useful and informative computer articles I've seen anywhere.

Like many of your early readers, I've long since made the transition to an MS-DOS machine, even though I still have the Kaypro 4 that got me started in micros. I appreciate the difficulty that you face in attempting to satisfy the diverse interests and experience levels of your readers while still providing more than superficial coverage of the many topics begging to be addressed.

The Kaypro, CP/M, and *PROFILES* have been fun. I hope you can preserve the magic as *PROFILES* evolves.

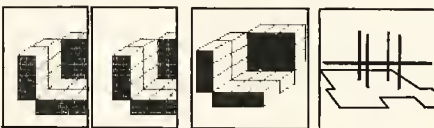
Best wishes in your fourth year.

Chuck Ervin
Poulsbo, Washington

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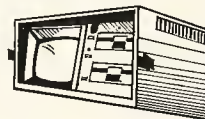
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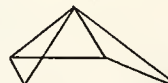


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Repair policy

I have come across something that is beginning to *irk* me to no end. I know from reading *PROFILES* that you are still committed to those of us who bought CP/M machines. Your department may be, but is the rest of the company?

It appears that a recent policy decision on the part of Kaypro is going to put all of us who purchased CP/M machines in peril.

I have a Kaypro II and 10. Today I was notified by my local Kaypro dealer that beginning next month, he will not provide repairs on CP/M machines, because Kaypro, under a new policy decision, will no longer send him any parts. He told me that Kaypro has advised him to send all CP/M machines to the California factory for repairs. I am sure that this will cause tremendous problems for all of us "obsolete" machine owners. How can I trust the shipping companies to care for my Kaypro 10, without spending a fortune in insurance coverage? Besides, how do you ship a machine without the proper shipping containers?

Calvin R. Householder
Severna Park, Maryland

There has been no policy change such as you describe. Patricia Crabtree, manager of Kaypro Technical Support, says that there are parts available for Kaypro's CP/M machines and that they are shipped to dealers upon request, usually within 24 hours.

However, if you are a Kaypro 2'83 or 4'83 owner, and you have a problem with your main board, your dealer will have to send your machine to the Solana Beach facility in California for repair. This is because these main boards are no longer being made and therefore cannot simply be replaced—they must be repaired.

Again, you only have to do this if you have an '83 series Kaypro and there is a problem specifi-

cally with the main board. Other parts for CP/M machines are readily available through Kaypro dealers. Also, Kaypro provides its dealers with shipping materials.

The problem may be that your dealer no longer wishes to support CP/M machines. Should your computer break down, I suggest you try another dealer and see if he or she is more amenable to repairing it.

A dBASE problem

I have a Kaypro 10 computer in which I use dBASE II. I have a data base with over 2,200 records in it and recently I ran across a problem.

My data base file contains 2,241 records, but when I try to use the EDIT command along with any record number over 2,228, I get a message that reads "Record out of range." I can list the out-of-range records and even print them, but I cannot edit them individually or with the BROWSE command. Can you tell me what is causing this problem?

George M. Bowman
Scarborough, Ontario

Your problem is related to a bug in dBASE II version 2.41, which was shipped with many Kaypro 10s and 4s.

dBASE II has a device called a record pointer, which designates the record currently being addressed. For example, when you give the command EDIT 2213, dBASE first moves the record pointer to record 2,213, then allows you to edit it. GOTO, INDEX, LOCATE, and many other commands all affect the position of the record pointer.

The bug is that sometimes the record pointer gets jammed—it lodges on a specific record and will not move past it. The commands that simply view records (like LIST or DISPLAY) will work fine.

To move the record pointer to

the end of the file, issue the command APPEND BLANK. This puts a blank record at the end of the data base and positions the record pointer on it. You can then issue the command DELETE, followed by PACK, and the blank record will be eliminated. The pointer, however, will remain at the end of the file.

Transferring software

I have a Kaypro 2'83. I am now thinking about selling the computer. Since it came bundled with software, it would be difficult to sell without the software. How do I go about transferring ownership of the software without infringing on copyrights?

Rick Mimbs
Vidalia, Georgia

Dennis Fay of Kaypro's legal department says, "An original purchaser of a Kaypro computer may indeed sell his computer along with the licensed software. The current software license states that you may transfer the software and license to another party 'if the other party agrees to accept the terms and conditions' of the software license agreement. The software license is granted to the computer buyer, who is then free to transfer it to another buyer, and so on."

When you transfer your software, include every copy of the protected software and the license agreements that came with them, and make sure the person buying the computer understands the restrictions and limitations imposed by the license agreements.

Finally, be sure to read the terms and conditions of the software license agreements carefully. These agreements were included in the software package that accompanied your computer and may contain other conditions governing transfer of software.

Kaypro 2000 disks

I have a few questions concerning my Kaypro 2000. The Multi-Adapter works fine with the 5-1/4-inch disk drive, with one exception. I can't seem to boot from it. I will live without the copy protected commercial programs, but it would be nice to use some of the entertainment disks. (Editor's note: Some copy protected programs require that you boot your computer on their disks.) Is there any way to get my Kaypro 2000 to boot from the C drive? I don't want to open up the drives to change the switches or wires that identify the drive.

Frank Snively
Fallbrook, California

Sorry, but there's no way to boot from the C drive. MS-DOS is designed to boot from the A drive. If DOS does not find a disk in the A drive, it looks for a hard disk and attempts to boot from it (the hard disk must have the operating system on it). If there is no disk in the A drive and no hard disk, then DOS displays an error message requesting that you insert a system disk.

As you imply, in other MS-DOS systems people have worked around this design by rewiring the drives so that the system will think the B or C drive is the A drive. This may be possible with the Kaypro 2000, but I wouldn't risk it. The 2000's internal circuitry is very sensitive to static charges. The slightest discharge from your hands or your tools could harm your computer irreparably. Make sure that any work done on your 2000 is done by a qualified technician.

You do not have to "do without" anything, though. Try buying software on 3-1/2-inch media. In the past this has been somewhat difficult, but with IBM's introduction of their laptop computer (the Convertible), more major soft-

ware packages will be available for your computer.

The Kaypro 2000 and the IBM Convertible use the same disk format, and the 2000 is a very compatible machine; you should not have any problems. However, there is no guarantee that soft-

ware written for the IBM Convertible will run on your machine. Before you buy any software insist that your dealer demonstrate it on your Kaypro 2000. Or, if you are familiar with the software in question, sit down and put it through its paces yourself.



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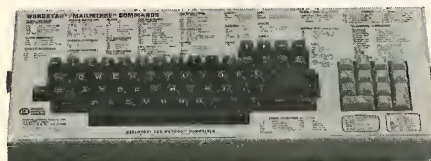
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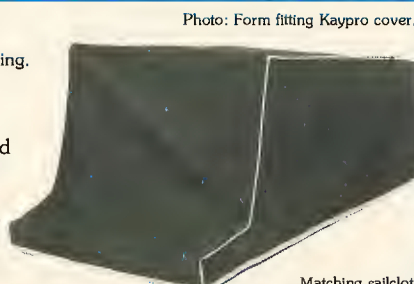


Photo: Form fitting Kaypro cover.

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Vocabulary Building I	4-7
Sentences I: Combining	5-8
Letter Writing	6-8
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Multiplan	\$ 75.00	\$ 69.00
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Turbo Tutor, Step by Step	\$ 34.95	\$ 32.00
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continued on next page —

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Punctuation and Style makes writing and rewriting much easier. The list price of **Punctuation and Style** is \$125. Central's price is \$95. Experience the power of this valuable "Punctuation Checking and Writing Improvement Software" yourself. Order today to get this program fast.

Punctuation and Style works on files created with Wordstar or Perfect Writer. It comes with an easy to use, clearly written manual and is packaged in an attractive binder. Join thousands who now write with more confidence, faster, and better.

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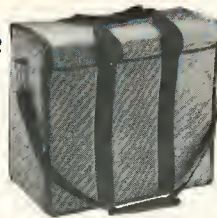
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Word Finder was compiled by a team of lexicographers. It is extremely fast and works within Wordstar, so you never have to leave your file to use it. Just put your cursor on a word in your text, press the escape key twice, and a list of synonyms appears. Then press a key if you want to select and automatically place an alternate word in your onscreen text. Magical. **Word Finder** will help you find the exact word you need to properly express your thought. List: \$79. Central: \$74. Order today. Get **Word Finder** fast.

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Life at 300 Baud

An electronic stocking



by Brock N. Meeks

Remember, as a kid, seeing your stocking hanging from the mantle? The anticipation of discovering the contents of that bulging stocking was almost unbearable. I know it was for me.

For those of you unwrapping new modems during this season,

password is validated by the sysop, be prepared to have your socks blown off.

First of all, this is a multi-user system, something of an anomaly among BBSs. Next, this board claims to have over 3,000 registered callers. A BBS usually has between 50 and 100 registered users. With all these extra callers trying to dial in, you're going to get a busy signal most of the time. For easy access you can pay \$100 a year. This will buy you a special phone number that will let you bypass the "modem hordes" on the number listed above.

So why the popularity of this particular board? Probably because there are over 2,000 public domain programs—online—for downloading. A typical BBS has, at most, several hundred programs online.

disk utilities, keyboard enhancers, RAM utilities, word processors, and 30 more.

Board Name: Handicapped Education Exchange (HEX)

Location: Silver Springs, MD

Phone Number: (301) 593-7033

Hours of Operation: 24/day

Log-on: Password issued

Baud Rate: 300

There's great potential in today's high tech society for improving the lives of disabled people, and this board acts as a clearinghouse for such information.

Disabled persons, those working with the disabled, or anyone interested in the disabled community will find vital information on this BBS, such as educational resources and organizations promoting self-help.

Board discussions center on

HEX acts as a clearinghouse for information on the latest technology to help the disabled.

and for those of you marking time between the Christmas turkey and the New Year's Day football games, here's an "electronic stocking," bulging with different bulletin board systems. Enjoy.

Board Name: Invention Factory

Location: New York, NY

Phone Number: (212) 431-1194

Hours of Operation: 24/day

Log-on: Registration and sysop validation required

Baud Rate: 300/1200/2400

The amount of trouble you have to go through to use this board regularly is worth it. The registration/validation process isn't tough, just time consuming. Once your

A BBS can only hold as many programs as it has storage for. The average well-stocked BBS will have about 20 megs of online storage. The Invention Factory is fueled by a 70 meg hard drive—some of the country's most popular regional networks don't have that much online storage!

The 2,000 public domain programs are divided into 43 separate file categories. Although I don't have the space to cover all 43, here are a few of the categories you will find: amateur radio, assemblers, batch file tools, business, commercial software demos, communications, data bases, encrypting/decrypting, DOS utilities, hard

ways new technologies can help the disabled move into the mainstream of society. They also include ways of pulling the disabled community together, to give them a stronger voice in areas that affect their day-to-day lives.

In addition, the board carries a confidential counseling service called "Just Between Us." Users can ask for advice on personal matters. Questions are handled by professionals experienced in working with the disabled. Currently Holly Turri is fielding the questions. Turri, blind since birth, has a degree in social work and has completed graduate work in rehabilitation teaching.

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(616) 363-4067

There are several files on the latest speech synthesis technology, government agencies that help the disabled, sources for terminals for the deaf, and even files examining legislative issues of concern to the disabled.

Board Name: Computers for Christ

Location: San Jose, CA

Phone Number: (408) 997-2790

Hours of Operation: 24/day

Log-on: Password issued

Baud Rate: 300/1200

This board's name says it all. Here you'll find an interdenominational base of users dedicated to proclaiming the deity of Jesus Christ. Around this time of year discussions can be found ranging from the history and meaning of Christmas to satanic worship. The frankness of these discussions may surprise you. Don't log on expecting to find "brainwashed" zealots.

You'll also find files that support the establishment of a scientific foundation for the Bible, and files regarding various aspects of the Christian faith.

The complete text of the *King James Bible* is online for downloading (the *King James Version* is also in the public domain). You can download the entire Bible, or separate books. You can also download a Turbo Pascal search program that works with the biblical text.

Users of this board are well versed in the apologetics of their faith and welcome well-reasoned opposing points of view. But don't expect to shake anyone's faith.

Board Name: Albuquerque ROS

Location: Albuquerque, NM

Phone Number: (505) 299-5974

Hours of Operation: 24/day

Log-on: Registration required

Baud Rate: 300/1200/2400

This is the home of the ROS bulletin board program. The designer and programmer of ROS, Steve Fox, runs this board. For those who

**3rd
YEAR**

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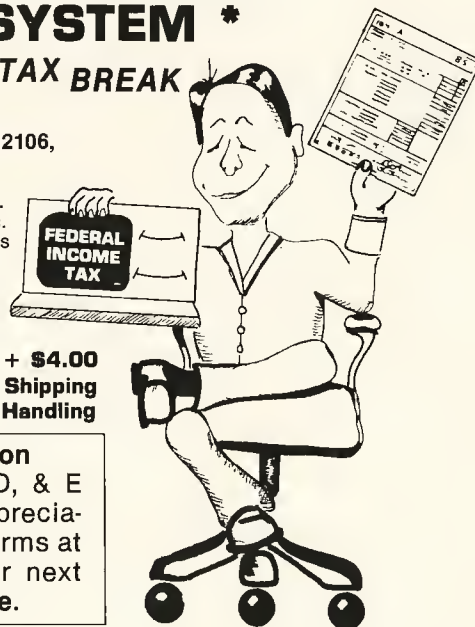
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don't know Fox, he is a living legend among BBS programmers.

This board is written in Turbo Pascal and is likely to be the fastest BBS (in response time) you'll ever log onto. (Kaypro Corporation's User's Group BBS—see article in this issue—runs on ROS.) The ROS system, once only for CP/M, is now available in MS-DOS. You can download either version from this board.

To gain full access you must register with Fox. He will validate your password within 24 hours.

The board carries one of the live-

a system for playing those promotional sweepstakes games—the kind sponsored by Publisher's Clearing House and *Reader's Digest*? Well, the Ardwolf Express has a file of tips for playing such games.

There are several user sponsored opinion polls, with topics spawned by current events. These polls usually set the stage for lively debates in the message sections. This is a popular board, and busy signals are the norm. Call during late evening hours for your best chance at connection.

to write a scene or just add some props to an existing scene.

The board's other message sections cover theater, film, video, dance, art, and music. An online magazine, *Atmospheres*, keeps tabs on the entertainment industry and the art world and often makes its data available for downloading. This might include a notice that a dance troupe is about to start casting for its next production, or that a film company is seeking extras.

Atmospheres also has want ads—available housing and roommates looking to share space.

The Call Board sysops encourage other theater groups to contact them about setting up similar bulletin boards.

On the Ardwolf Express you will find general- interest information from movie reviews to recipes.

liest message bases on computers I've ever seen. You can discuss just about any kind of computer, from Kaypro to Atari. Of course, there is an excellent message base dealing with Turbo Pascal.

There are several download file sections. These include Boots, which contains what the board calls "bootstrap" (basic) help for squeezed and library files; Lang, containing public domain compilers and interpreters; and also ROS-NET, holding directories and information for other ROS locations. With 20 megs of storage, there's a wealth of public domain programs for CP/M and MS-DOS.

Board Name: Ardwolf Express
Location: Fremont, CA
Phone Number: (415) 651-4147
Hours of Operation: 24/day
Log-on: Registration required
Baud Rate: 300/1200

This is truly a general-interest board. You'll find movie reviews, tips on obtaining financial aid for college, even recipes.

Have you ever wondered if there's

Board Name: Electronic Call Board
Location: New York, NY
Phone Number: (718) 499-1633
Hours of Operation: 24/day
Log-on: Password issued, validation required for full access.
Baud Rate: 300/1200

This board is for everyone interested in the performing arts or organizations that support the performing arts. It functions as an online support group as well. Employed and unemployed actors (mostly from New York) meet here and discuss the volatile world of acting in the "Big Apple." Organizations are represented on this board, listing available jobs and dates for casting calls.

If you aren't an actor but are interested in the arts, you will enjoy features such as theater and entertainment listings for major metropolitan areas.

There's also a "step on stage" message section where users can adopt online personas and "act out" their favorite characters. If you don't feel like taking on an alter ego, the Call Board encourages you

Board Name: Santa Fe Message
Location: Santa Fe, NM
Phone Number: (505) 988-5867
Hours of Operation: 24/day
Log-on: Password issued
Baud Rate: 300/1200/2400

Santa Fe Message is an electronic town hall for this popular Southwestern artists' hangout. The board carries over 20 megs of information about Santa Fe and the surrounding areas of Los Alamos and Taos.

Skiing is the dominant topic of the board during the winter season. The sysops check in every morning and list the snow conditions of Taos' world class ski runs and other area ski resorts. Weather conditions are also updated regularly.

The board is also a tourist's guide to Santa Fe's many art galleries and entertainment spots. If you're planning a trip to Santa Fe you can leave your questions on the board. Your answers will be waiting for you the next time you log on.

Kathy Christison, co-sysop of the board, is also a licensed tax preparer. You can leave Christison questions about your taxes. ("But I don't do corporate taxes," she says.) Christison charges a nominal fee for this service—but it's the only thing, besides the phone call, you'll have to pay for on this board. ■



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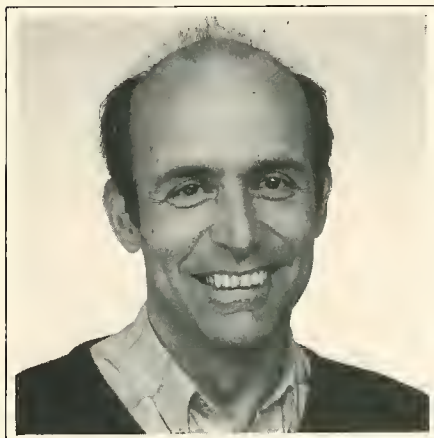
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Flea Market

Will MS-DOS talk to CP/M?



by Ted Silveira

I had written several chapters of a printer manual and needed to send them to the typesetter. Though I use both CP/M and MS-DOS Kaypros, I'd written these chapters on the CP/M computer using WordStar. Then I found out the typesetter not only wanted the files on an MS-DOS disk but wanted pure ASCII files with printable characters only, no carriage returns except at the ends of paragraphs, and no WordStar funny business with hidden markers.

It could have been a disaster, but it wasn't. Using a slick program called File Mate (more about this later), I converted the WordStar files to exactly the kind of ASCII files the typesetter wanted. Then, using a disk format conversion program called Media Master, I moved the converted files onto an MS-DOS disk. Off they went to the typesetter, who gobbled them up and never knew (or cared) what form they'd started in.

I mention this story because many of you, like me, may find yourselves working with two different computers, one CP/M, the other MS-DOS. You may use one computer at work and the other at

home, or one in the main office and the other in the branch. Or you may be a freelancer who uses CP/M but finds that most clients (and publishers and typesetters) want disks and files in MS-DOS.

Whatever the case, the problem is shuffling information between the two computers. You start a form letter on the MS-DOS computer only to find that your mailing list is in a MailMerge file on the CP/M computer. You're working out a contract on the CP/M computer and realize you could extract sections from some contracts you have stored on the MS-DOS computer. Or you're just putting the finishing touches on that user manual with WordStar when you find out that your client has discovered desktop publishing and wants to use Microsoft Word and a laser printer.

So how do you get the information you need from one computer to another? That question really breaks down into two more specific questions. How do you move your files from a CP/M computer to an MS-DOS computer or vice versa? And once you've moved the files, how do you get them into a form that you can use?

Transferring files

There are several ways to move files from one computer to another. If the two computers are in the same room, you can use a cable to connect the serial port of the CP/M computer to the serial port of the MS-DOS computer. When connecting a CP/M Kaypro to an MS-DOS Kaypro, you must use a *null modem* cable, which has line 2 from one computer connected to line 3 from the other and vice versa.

Once you have the two computers connected, you can run a communications program on each one and transfer files back and forth at speeds up to 9600 bps (bits per

second). For such transfers, you can use programs such as MITE (which has been bundled with both CP/M and MS-DOS Kaypros), CP/M public domain programs such as MDM740, MEX114, and IMP244, and MS-DOS shareware programs such as QMODEM and PROCOMM.

If the two computers are in different locations, you can still transfer files by using a communications program and a modem together to send files over the telephone lines. While this method allows you to exchange files with people in any part of the country, it has a few disadvantages. First, you have to buy a modem for each computer (prices range from \$100 for the cheapest 1200-bps modem up to \$600 or \$800 for a 2400-bps modem). Next, unless you have access to special phone lines, you're currently limited to speeds of no more than 2400 bps (and that is only if you have a 2400-bps modem on each end), so it takes a while to send files, about an hour to transmit a 360K disk of files at 1200 bps. Finally, you have to pay the telephone bill.

A better solution, if you transfer files regularly, is a disk format conversion program, which will let one computer read and write disks in different formats. With the proper program on your CP/M computer, for example, you can read disks from the MS-DOS computer and copy files onto or off of the MS-DOS disk. And the reverse is also true—with the proper conversion program on your MS-DOS computer, you can copy files onto and off of a Kaypro CP/M disk.

Because it's increasingly an MS-DOS world, it's more important to have a disk conversion program running on your CP/M computer than on your MS-DOS computer, but if you do a lot of disk transfers, as I do, it helps to have both.

There are several disk format conversion programs available. For CP/M, you can choose from Compat (Mycroft Labs), Media Master (Intersecting Concepts), UniForm (MicroSolutions), and possibly others I haven't heard of. (MFDISK, the quasi-public domain program shipped with many CP/M Kaypros, can't read or write MS-DOS disks.) For MS-DOS, you can get Media Master Plus (Intersecting Concepts), UniForm-PC (MicroSolutions), and again, probably others I haven't seen. Personally, I've used UniForm, Compat, and Media Master in CP/M and Media Master Plus in MS-DOS, and all handled the job of transferring files between CP/M and MS-DOS without trouble. For more details on all these programs, see T.F. Chiang's article "Multi-Format Programs" in the July 1986 *PROFILES*.

Converting files

Transferring files from one computer to another doesn't automatically make them usable. Most word processors, spreadsheets, and data bases will make noises worse than any two-year-old if you try to feed them the wrong kind of file.

The simplest answer to this problem of file compatibility is to have the same program (or a compatible one) on both computers. WordStar 3.3, for example, comes in both CP/M and MS-DOS versions, and its files are interchangeable—a file you start with MS-DOS WordStar you can finish with CP/M WordStar and vice versa. The same is true for other MicroPro products such as MailMerge.

The situation for dBASE II is similar, with some restrictions. dBASE II data files can be used with either the CP/M or MS-DOS versions of dBASE II, and most—but not all—command files are also

interchangeable. But most MS-DOS dBASE users are now using dBASE III or dBASE III Plus, which will present problems, as dBASE III can do things that dBASE II can't. In general, you can expect to transfer dBASE II files to dBASE III, but don't expect the reverse to be true unless you've been careful not to exceed dBASE II's limits. You'll find the same situation with other "crossover" programs that are available in both CP/M and MS-DOS, such as SuperCalc2 and Multiplan.

If you don't have the same program running on both the CP/M and MS-DOS computers, you may still be able to transfer files and use them successfully if the programs you do have on the two computers have compatible file formats. Many programs can read and write files stored in a standard format such as DIF (data interchange format), Microsoft's SYLK format, or the very common CSV (comma-separated variable) format, also known as the comma-delimited format. MailMerge users and many data base users will recognize this last format, in which the data items or fields of a data base record are simply separated by commas. Many programs, such as dBASE II, which don't actually use the CSV format while working, can still write a file into that format and read one written in it.

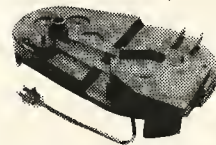
Using such common file formats to transfer information between otherwise incompatible programs takes more time than swapping WordStar files, but if it's your only alternative, the few extra steps required for conversion will be well worth it.

If your program won't write or read files in a format other than its native one, you may still be able to transfer files by using an external file conversion program that will

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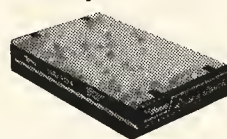


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take one kind of file and turn it into another.

For example, WordStar files contain special marking characters, both print formatting commands like ^S and ^B and also hidden marks that let WordStar keep track of where words end, which carriage returns are soft, and similar things. But other programs—such as Perfect Writer, Microsoft Word, or the MS-DOS TYPE command—don't understand WordStar's hidden marks and may interpret them as graphics or foreign characters, if they don't just refuse to read them.

You can, however, turn the WordStar document file into a *standard ASCII file* (one consisting only of printable characters) by filtering out WordStar's hidden markers and control characters. In CP/M you can simply copy the file using PIP with the [Z] option (though this will remove only the special marks, not the control characters), or you can use one of the public domain filter programs such as FILT7, UNSOFT, or PURETEXT. In MS-DOS, you can use public domain and shareware filters such as WSCLEAN, STRIP, and WS2ASC to do the same job.

If you want to take an ASCII file that has a hard carriage return at the end of every line and turn it into a WordStar document file (with soft carriage returns), you can use a different filter program—the public domain programs ENSOFT (CP/M) and FIXTXT (MS-DOS). These will do a fairly good job of conversion, but they can be confused by some files (ones with complicated tables or other tricky formatting).

There are also programs that will do both conversions, WordStar to ASCII and ASCII to WordStar. In CP/M, you can use the public domain HARSDOFT, and in MS-DOS, you can use the public domain and shareware programs WSASCII and WSCONV.

For MS-DOS, you can also find two other shareware programs, XWORD and TEXTCON, that can handle conversions for several different word processors. XWORD

claims to handle conversions to and from ASCII, WordStar, WordStar 2000, SideKick, MultiMate, XYWrite, and Word Perfect. TEXTCON basically converts all files to ASCII files, but it has many flexible formatting options that make it possible to import those ASCII files into different word processors.

Finally, File Mate, which I mentioned earlier, is a commercial program from Intersecting Concepts that is a generalized program for converting files to ASCII formats. Several things set File Mate above the public domain and shareware ASCII filters that I've mentioned so

File Mate is a generalized program for converting files to ASCII formats.

far. For one thing, it handles the conversion from WordStar document to "long line" ASCII file (carriage returns only at the ends of paragraphs) better than any other program I've tried. It doesn't get confused by WordStar's "soft" spaces and other tricks that occasionally cause filter programs to run words together or make other mistakes. (It also has other options besides this long-line format.)

For another thing, File Mate has some nice options for setting line-ending markers, checking for end-of-file markers, and filtering out control characters and such. And finally, File Mate has some very useful "debugging" options that let you examine a foreign file to find out how it's constructed and marked and then convert any unusual characters into a readable form. I like File Mate a lot.

How much compatibility do you need?

If the job you're doing absolutely demands that you use a particular program—an accounting program

or a spreadsheet or whatever—that runs only on a CP/M computer or only on an MS-DOS computer, then there's no substitute. You'll have to use that particular computer.

But if you really only need to worry about getting your final results into the right file format and getting the file onto the right disk, then you'll probably find you can do your work wherever it suits you and move your files from CP/M to MS-DOS, or vice versa, after the fact. In particular, you freelance writers and other independent contractors who use CP/M computers will find that it's not always necessary to have an MS-DOS computer just to be "IBM compatible."

I've only been able to cover these various techniques for transferring and converting files in the most general way here, so if any of you have come up with a solution to some specific compatibility problem, write to me c/o *PROFILES*, and tell me about it.

The public domain and shareware programs mentioned this month can be found on most major CP/M and MS-DOS bulletin boards and on the KUG ROS board (619/259-4437). For more information on the commercial programs mentioned, contact:

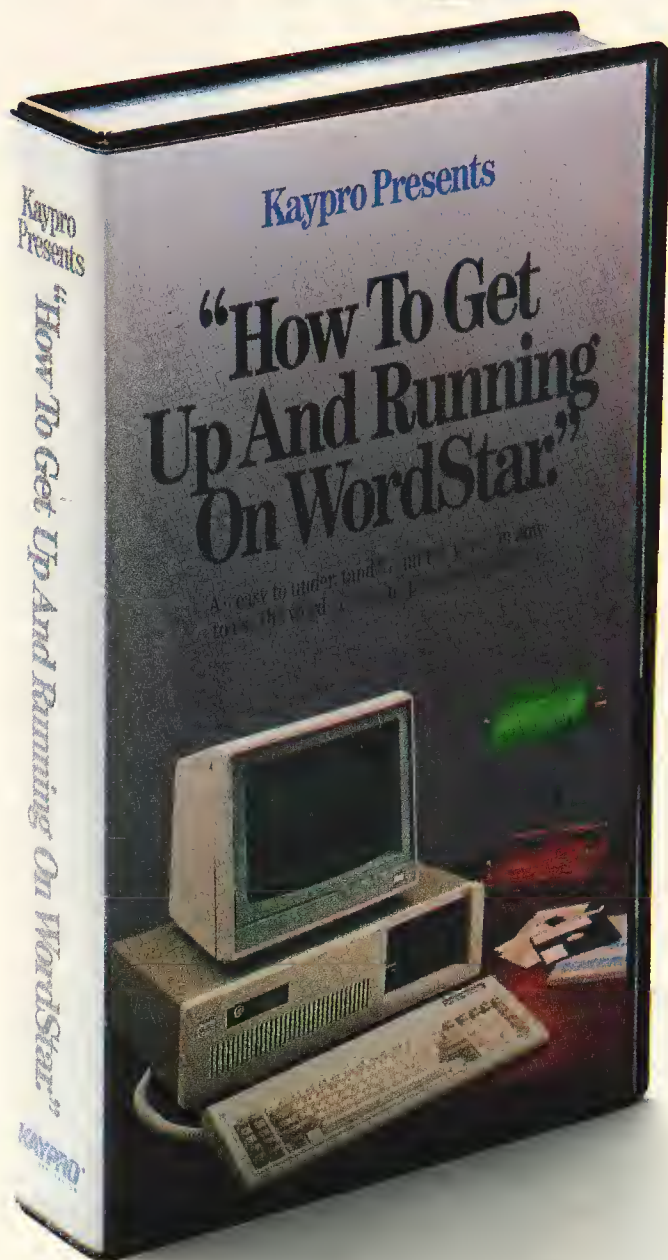
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Cold Type Gets

An overview of desktop publishing

HOT
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by Ted Silveira

When I was 14, I learned to set type by hand and to run an old-fashioned letterpress, and I was fascinated by the printer's world of picas, points, leading, and fonts. That hot type, made

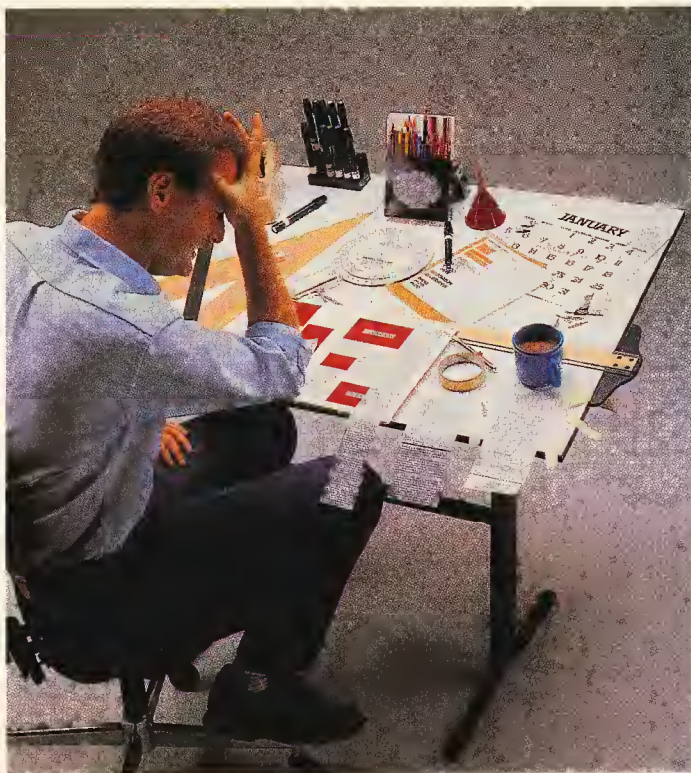
from cast metal, has long since been replaced by cold type, created first from film and now from digital images, but I find the new world of print as fascinating as the old.

And so do many other people, apparently. In 1985, many computer industry analysts predicted that 1986 would be the year of the expert system, the year that artificial intelligence would fulfill its promise. Instead, 1986 turned out to be the year of desktop publishing and the laser printer, with hardware and software companies scrambling for shares of this new market, spurred by the thought that the Fortune 500 spend \$40 billion a year on publishing.

Enter desktop publishing

Computers aren't new to publishing. Modern digital typesetting machines are really computers themselves, controlled from terminals that are specialized microcomputers. And for some years, writers have been submitting manuscripts on disks so that typesetters can skip the tedious (and expensive) job of keying the manuscript into the typesetting machine.

But *desktop* publishing is something new. Now you can use your computer not only for writing and editing but also for many publishing jobs previously done by hand, including designing page layouts, creating art, and making up camera-ready pages. Now one person with a computer can control almost the entire produc-





PHOTOS BY R.S. POWERS

Desktop publishing involves fewer steps, fewer people, and fewer chances to introduce errors.

tion of a newsletter, advertisement, magazine, company report, or book.

Three things combined to create desktop publishing:

1) Cheap computers with enough computing power and memory to handle both text and graphics on the screen at the same time.

2) Relatively cheap laser printers that can print both text and graphics at the same time. While the current resolution of these laser printers (300 dots per inch [dpi]) doesn't equal that of typesetting machines (1,200-2,500 dpi), it's good enough for many uses.

3) *Page makeup* software that lets you create an empty page on your screen, place both text and graphics on that page, view on screen a facsimile of the final printed page (with all art in place and all type in its correct typeface and size), and then send the results to a laser printer or high-resolution typesetter. In the last three months, a dozen such programs have been introduced for MS-DOS computers.

To understand what desktop publishing can do, consider what it takes to get a page printed.

The publishing process

The traditional publishing process is long and complex. A writer submits a manuscript. An editor reads through the manuscript, checking it for content and style, and then marks it with typesetting directions—what typeface for the main text and what for the title and headings, how wide the columns should be and how much space between lines, which words should be *in italics*, which **in boldface**.

Meanwhile, an art editor arranges for any line draw-

ings, photographs, or tables needed. If the art doesn't already exist, it has to be created, converted to the proper size, and made ready for the printer.

The marked manuscript goes to a typesetter, who types the text into the typesetting machine, adding the codes to designate typeface, type size, line width, and so on. Then the typesetting machine, through a photographic process, produces galleys—long sheets of paper with the text in its proper typeface and size but printed in single columns rather than in pages.

The galleys are repeatedly proofread and revised until both the text and the format (layout, size, style, etc.) are correct. Then a final set of galleys is printed on high quality paper and sent for paste-up.

In paste-up, the galleys are cut into page-length columns and carefully pasted onto master pages, along with headers, footers, page numbers, advertisements (in a magazine), and the final art. The pasted-up pages are then photographed, and the film is used to make printing plates for the press that finally produces the kind of page you're reading now.

The desktop publishing process

In contrast, desktop publishing involves fewer steps,

fewer people, and fewer chances to introduce errors. For example, a desktop publisher who has a computer and a WYSIWYG (what-you-see-is-what-you-get) page makeup program might work like this:

The writer submits a manuscript as a file on disk. The editor makes content and style changes directly in the file. An art editor arranges for any art needed—some art, like charts and line drawings, can be done on a computer; other art, like photographs, will be done in the usual way.

Using the page makeup program, the editor then creates templates—empty pages on the screen that show where text and graphics will be placed and what typefaces and sizes will be used. In a book, most of the pages may be exactly the same; in a magazine article, every page may be different.

Next, the editor uses the page makeup program to format the manuscript file according to the layout devised, electronically “pouring” the text into the template pages on the screen and then adding headings, subheadings, and other elements. If the art was done by computer, it can be set in its proper place on the page and included in the file; if not, the editor creates blank spaces where the art will be pasted in later.

At this point, the editor can see a relatively accurate

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facsimile of the pages on-screen and can tinker with the layout, moving text and art around until everything is right.

Once layout is correct, the editor prints the pages on a laser printer, proofreads the pages again, and makes necessary corrections. For an informal job such as a newsletter, the 300 dpi resolution of the laser printer may be good enough for the final output, in which case the editor will laser-print a final set of pages and send them to the printer, who will use them as "camera-ready copy" to make the printing plates. For a job that requires higher resolution, the editor can send the page makeup file through a compatible typesetting machine, generating camera-ready pages (not galleys) with a resolution of 1,200-2,500 dots per inch. These typeset pages are then sent to the printer as camera-ready copy. (Of course, any art not done on the computer must be pasted into place before the final pages go to the printer.)

Pros and cons of desktop publishing

Some advantages of desktop publishing, like having personal control over the quality of your publication, can't be measured in hours or dollars. But other advantages are quite concrete.

You save time and money, for example, because the typesetter doesn't have to retype your text or insert typesetting codes. You also get a hidden savings here—no one will introduce any new errors in the course of retyping, so you cut down proofreading and correction time.

You also save by eliminating many steps in the traditional galley and paste-up process. You don't need galleys because you can work directly with pages. And your electronic paste-up will be both precise (since the computer makes consistent placement easy) and easy to change (since electronic "glue" is less tenacious than the real thing).

You can preview results—either on-screen or via laser printer—before paying for any expensive typesetting. This preview lets you catch errors, check your page design, and get comments from your audience. In the traditional process, if you decide at the paste-up stage that your typefaces are wrong or your graphic elements clash, you're in expensive trouble—the typesetter will have to recode your text files and make new galleys. With an electronic page makeup program, however, you can make changes more quickly and more cheaply.

Finally, at times when 300 dpi resolution is good enough, you can save money by avoiding the typesetter altogether and using your laser printer to produce the camera-ready copy for the printer.

Desktop publishing has drawbacks, however, as many novice publishers have discovered. You first have the expense of the hardware and software, which can easily reach \$10,000 if you include the cost of a computer and a laser printer.

You also must face the limitations of current page makeup programs. For example, these programs are just beginning to offer sophisticated options like *kerning*, which lets you adjust the distance between certain pairs of letters to make them look better on the page. To see kerning in action, look at the opening two letters of this sentence. If set normally, a lowercase "o" will seem too far away from an uppercase "T" because of the shape of the letters, so typesetters use kerning to make the "o" nestle under the crossbar of the "T." You can't ignore such subtleties because readers have become sensitive to them through years of reading typeset material.

Consider, too, that though page makeup programs

Publishing is a complex business, and to take it on all by yourself you must wear many hats.

make precise layout much easier, you still need a strong sense of visual design to create good-looking pages and ads—you may find you need to hire a professional designer to create your page layouts. (Before long you'll see companies selling libraries of master page layouts for common publishing situations.)

Publishing is a complex business, full of specialists, and to take on the entire publishing job yourself, you must be writer, editor, designer, proofreader, paste-up person, typesetter, and gofer all in one. Even with a computer, you'll find that a major project requires painstaking attention to hundreds of details.

Desktop publishing in CP/M

Here's the bad news. You're not going to see any WYSIWYG page makeup programs for CP/M Kaypro because these computers don't have the graphics power needed to display art, true typefaces, and facsimiles of page layouts on a computer screen. And you're not going to see CP/M software developed in this area because CP/M computers are not perceived by most software companies as a money-making market.

But CP/M users aren't stranded. First, a CP/M Kaypro with WordStar is as good a writing machine as there is, so use it for your writing and editing. Even if you have access to a computer with page makeup software, do your text on the CP/M Kaypro so that the more expensive computer is free to do what it does best—juggle text and graphics.

If you plan to have a typesetter do the production for you, you can save the time and expense of retyping by giving the typesetter your text as a computer file. Most typesetters will now accept files either by modem or on

disk in most common formats, including Kaypro CP/M and MS-DOS, if you submit your text as a pure ASCII text file with carriage returns only at the ends of paragraphs and without special codes or characters. With this method, you lose any special formatting you may have in the manuscript, and you still must go through the galley and paste-up stages.

If you have a cooperative typesetter, you can take the process a step farther by marking your text with "pseudo-codes" (such as \i for italics or \b for boldface), which the typesetter will translate into real typesetting codes. If you've never worked with type before, you'll find this job tricky because you can't see the results of your coding until you get the galleys back, and simple coding errors can produce bizarre results, such as entire pages set in boldface headline type. By entering your own codes, you save some "massage" time—hours required for the typesetter to insert codes into your text. However, if there are errors in the formatting, the corrections will now be charged to you instead of the typesetter.

Surprisingly, you can go still farther with your CP/M Kaypro. With a program called TypeFit, from Wordsmiths Typesetters of Great Britain, you can typeset from WordStar files and even use your CP/M Kaypro to control, through a direct connection, a Monotype Lasercomp typesetter or any typesetting machine that uses the CORA language (such as the Linotype 202).

TypeFit understands most WordStar print control codes (such as ^B and ^S) and dot commands and adds a few new dot commands to extend your formatting. It lets you build a layout file giving the type specifications for your main text, headings, column width, and so on. For more complicated work, you can use a special coding (called *intercode*) to insert typesetting commands in the text and even to create your own custom commands.

TypeFit reads your coded text file and your layout file and then copyfits the text, creating a new file that shows where the lines and pages will break when the file is typeset. The program also has an option that prints the file on an Epson-compatible dot-matrix printer, using only a single plotter-style typeface but showing all type in its correct size and placement.

Though it doesn't provide true WYSIWYG, TypeFit's copyfitted previews and especially its dot-matrix printer "page-plot" are a major improvement over the blind formatting described earlier and should allow you, if you're careful, to skip galleys and go directly to typeset pages (though you'll still need paste-up for art). It's probably not the system you'd want for complex ad layouts, but for any project with a consistent format, such as a newsletter or user's manual, it could be quite good.

At the moment, TypeFit works only with the typesetting machines mentioned. But Wordsmiths Typesetters is currently adding support for various laser printers and more typesetters, so the future looks good.

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Desktop publishing in MS-DOS

With an MS-DOS computer, like the Kaypro PC or 286i, you can use any of the options mentioned under CP/M. But the real excitement in MS-DOS is WYSIWYG page makeup programs.

In the past few months, at least a dozen such page makeup programs have been introduced for IBM-compatibles, most at the Seybold Desktop Publishing Show in San Francisco last September. Though these programs are just now being released, the previews at the Seybold show indicated that some will be as good as or possibly even better than similar programs for Apple's Macintosh, the early leader in desktop publishing.

Of the MS-DOS page makeup programs I saw at the Seybold show, at least four look like heavyweight contenders—PageMaker from Aldus, Ventura Publisher

Ventura Publisher, a sophisticated program that handles graphics, is one of the best.

from Xerox, Harvard Personal Publisher from Software Publishing Corporation, and First Impression from Megahaus. PageMaker, which runs under Microsoft Windows, has drawn early notice because a Macintosh version of the program has been available for most of 1986, giving the company the advantage of experience and at least some IBM-Apple compatibility, a feature that could turn out to be important.

Ventura Publisher, based on its preview version, seemed to be the best performer of the lot. It's a sophisticated program that runs under Digital Research's GEM environment and has the ability to import graphics in the popular AutoCAD format. Harvard Professional Publisher is quicker and more powerful than Software Publishing's other offering, ClickArt Personal Publisher, and showed some excellent tools for combining text and graphics. Megahaus' First Impression, though still under development at the Seybold show, has some excellent features, including style sheets (templates) and unlimited document length, and does not require either Windows or GEM to run.

With only glimpses of preview versions to go by, I can't give you any firm opinions on which programs are best, but I can give you a list of things to think about:

1) All the programs at the Seybold show were running on IBM AT-class computers, and with good reason—the standard 4.77 Mhz PC-compatible doesn't really have enough power to do the text and graphics juggling required by a WYSIWYG display. You need at least a turbo-speed PC (like the 8 Mhz Kaypro PC) and preferably an AT-class machine (like the Kaypro 286i). Ventura Publisher claims good performance on a stan-

dard PC, but even so, Univision, manufacturer of many speedup boards for PCs, is already offering Turbo Publisher, a 10 Mhz 8086 speedup board that comes bundled with Ventura Publisher.

In judging performance, see how fast a program is when making changes to the layout of a reasonably complex document. A program may perform well enough if only one page is affected, but how does it do when a change on one page forces a chain reaction of changes on following pages? First Impression, for example, will update the page you're working on and let you go back to work. Then, whenever the main processor is idle, the program will sneak off in the background and update pages further down the line, so that in many cases you'll notice little or no slowdown.

2) You'll need the full 640K of RAM (random access memory), at least a 20 megabyte hard disk (more if you're going to store a lot of graphics), a mouse, and either an EGA-compatible color graphics card and monitor or a Hercules-compatible monochrome graphics card and monitor. (I'd stick with the Hercules monochrome graphics—the resolution is better, and we don't yet have color laser printers.)

3) It's extremely useful to have a laser printer, whether you use it to create camera-ready copy or just to print test pages before sending your files to the typesetter. Still, if money is tight, you may be able to wait on the laser printer. Some quick-copy chains, such as Kinko's, have laser printers available so that you can bring in your disk and print it. At the moment, these shops are oriented toward Apple's Macintosh and LaserWriter, but that should change as PC-compatible products flood the market.

4) Make sure the page makeup program you choose can import text files from the word processors you normally use. Ideally, it should retain all the formatting information (boldface, italics, indents, etc.) in the original file, but that may be too much to hope for. Check anyway.

5) Find out how well the program handles graphics and what graphics file formats it can import drawings from. If you're going to use technical illustrations, for example, make sure the program can import files from AutoCAD, the major MS-DOS computer-aided design program.

6) Look for a program that has typographic necessities like kerning and hyphenation. Good kerning is a mark of quality typesetting, and hyphenation is essential if you want your text fully justified (both margins even, as in the columns you're reading now). Up to now, page makeup programs have been weak in both kerning and hyphenation, which is one reason why many desktop-published documents are printed with unjustified ("ragged") right margins. I like ragged right type in many situations, but it should be an option, not a necessity.

7) Look for a page makeup program that lets you create style sheets or templates. If you're doing a

newsletter or something similar, you don't want to have to create every page from scratch for every issue. With templates, you (or a professional designer) can create master pages that establish the "look" of a publication and then turn the actual production over to someone less skilled.

8) If you work with long documents, make sure a page makeup program can handle the length you need. Some programs let you chain smaller files together for printing, but that's not as convenient as having a single file.

9) Find out how the program handles text changes made after the text file has been imported into the page makeup program. Some programs create a new file containing both the text and the formatting information so that changes made exist only in this file. Other programs maintain separate text and format files so that text changes are made to the original text file. Generally, the second system is better because it means your text file is always up to date.

10) Find out what typefaces are available for the output devices supported by each page makeup pro-

gram. At the moment, only a fraction of the traditional typefaces are available on laser printers. Even typesetters differ, so you may find that a typeface you like is available on a Linotype machine but not on a Compugraphic.

*Be cautious before
sinking your money into
a system that may turn
out to be a dead end.*

11) Don't be misled by the "eight pages per minute" output claims made for laser printers. Such figures apply only when you're making eight copies of the same page. The first print of a page always takes longer (because it must be built up in the printer's memory), so printing eight different pages will take noticeably longer than printing the same page eight times. Pages with a lot of graphics take longer still.

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HOT TYPE

Final words

If you're considering desktop publishing, these are awkward times because no standards have been established yet. Be cautious before sinking thousands of dollars into a system that may turn out to be an evolutionary dead end. To give just one example, Ventura Publisher looks like an excellent product, and it's marketed by Xerox, no fly-by-night. But Ventura Publisher runs under the GEM environment—if the MS-DOS world swings heavily toward GEM's competitor, Microsoft Windows (as it well might), will Ventura Publisher be isolated from new MS-DOS products?

But these are also exciting times—new products are appearing everywhere, and things are possible now that were impossible six months ago. Desktop publishing has arrived. With a computer and a laser printer, you really can publish from a desktop. □

Ted Silveira is a freelance author and has taught writing at San Francisco State University. He's also a contributing editor for PROFILES.

Quick Reference Summary

Product: TypeFit (CP/M or MS-DOS)
Manufacturer: Wordsmiths Typesetters
19 West End St.
Somerset BA 16 0LQ
United Kingdom
Telex: 46401 TELADX G

Product: First Impression (MS-DOS)
Manufacturer: Megahaus Corporation
5703 Oberlin Dr.
San Diego, CA 92121
Phone: (619) 450-1230
Sugg. List: \$695

Product: Harvard Professional Publisher (MS-DOS)
Manufacturer: Software Publishing Corporation
1901 Landings Dr.
P.O. Box 7210
Mountain View, CA 94039-7210
Phone: (415) 962-8910
Sugg. List: \$695

Product: PageMaker (MS-DOS)
Manufacturer: Aldus Corporation
411 First Ave. South, Suite 200
Seattle, WA 98104
Phone: (206) 622-5500
Sugg. List: \$695

Product: Turbo Publisher (MS-DOS)
Manufacturer: Univision, Inc.

1231 California Cir.
Milpitas, CA 95035
Phone: (800) 221-5842, in CA (408) 263-1200
Sugg. List: \$895

Product: Ventura Publisher (MS-DOS)
Manufacturer: Xerox Corporation
Phone: (800) 822-8221
Sugg. List: \$895

Other Resources:

Magazines

Publish!

\$29.90 for 6 issues/year
501 Second St. #600
San Francisco, CA 94107

Publish!, which took over *Desktop Publishing*, the pioneer magazine in the field, is entirely dedicated to desktop publishing. Though the price is a bit stiff for a bimonthly magazine, the information is good and the magazine is a pleasure to look at. It's worth the price just for the work of Marjorie Spiegelman, who's the design consultant for the magazine and writes a column on design.

Personal Publishing
\$30 for 12 issues/year
P.O. Box 390
Itasca, IL 60143

Personal Publishing, also dedicated to desktop publishing, doesn't have the gloss of *Publish!* (it's done via 300 dpi laser printer instead of 2,500 dpi typesetter) and its design isn't quite as clean, but it comes out more often, and it's jammed full of useful information. It's an excellent example of what you can do at 300 dpi, and at \$30 for 12 issues, it's a better deal than *Publish!*. Make sure you pick up the back issues quickly—some have already run out.

Books

Editing by Design and Mastering Graphics
Jan V. White
R. R. Bowker Co.
New York

If you're a novice when it comes to publishing design, these two books are a must. They're clear, sensible, and useful, and though they lean toward magazine-style design, they're valuable to people working with any kind of publication. They're also beautifully designed themselves.

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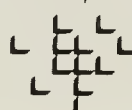


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A Screen Control Toolbox

A tutorial on using video attributes

by Daniel L. Schuster

What is screen control? It's more than just putting words up on your CRT. Screen control includes erasing your screen, moving the cursor to any point on the screen, and turning video attributes on or off. The purpose of this article is to show you how to use video attributes in your programs to manipulate the screen's appearance.

A video attribute is a visible characteristic that you assign to the words and letters on the screen. Letters and words on your screen can, depending on your model of Kaypro, be bright, dim, blinking, underlined, or have a combination of several of these attributes.

We'll use both Turbo Pascal and MBASIC (Microsoft BASIC 80) to illustrate how to manipulate your screen's appearance. All CP/M Kaypros come with MBASIC, and Turbo Pascal is the best selling programming language currently on the market, so presenting examples in these languages will be of the most use to the greatest number of people. It is assumed that you are already familiar with one of these languages. You aren't assumed to be an expert programmer, but there's no reason you can't use some of the experts' tricks. Also, everything you learn here applies to *any* programming language.

Before we get started one warning is in order: When you're developing a program that uses screen control, you may "lock up" the screen occasionally—most of us do. You'll see everything stuck on one line and the screen looking kind of funny. In Turbo Pascal simply exit to the editor to clear things up. In MBASIC you can issue the clear screen command (explained below) in direct mode (no line numbers). This generally sets things back to normal. When you use certain languages, or accidentally tell the computer to do something weird, you may have to reset the computer to recover.

Why bother?

There are two good reasons for learning screen control techniques. First, by using the same tricks experts do,

your screen I/O will run a lot faster. For example, to blank the screen, you might issue 24 PRINT statements in a FOR-NEXT loop. That would certainly work, but you can do it much faster with a single program statement if you know how. The second reason is simply that by using screen control techniques you can get a more professional looking program. For example, if your program requires user input, you could use:

```
PRINT "Enter your answer"
INPUT X$
```

But suppose the user doesn't enter a valid answer the first time and you have to reject it. Then you've got to issue the PRINT and INPUT statements again, which means the previous "Enter your answer" and the answer itself stay on the screen and scroll up. And if the user fouls up again, the same things happen. All that scrolling results in a cluttered and unprofessional looking screen. But with the right commands you can send the cursor back to where the user entered the first incorrect answer, erase that answer, and then give the user another chance. The latter technique looks better and is also much faster.

Kaypro's terminals

Kaypro has used two different video systems in their CP/M machines. The early non-graphics version, used in the '83 series, doesn't have all of the capabilities of the later '84 series machines. The '83 series lacks inverse video, low video, underlining, etc. But early Kaypros *do* have the most important video commands. I'll let you know which functions are available in these earlier Kaypros.

If you're unsure what you've got, here's an easy way to tell.

1. Make sure you are at the A > prompt at the CP/M level.
2. Now press the **ESC** key, the **B** key, and the **O** (zero) key, with no spaces between them, and then press **RETURN**.

3. Now type a few characters. If you have black letters on a bright green background, then you have an '84 series Kaypro with the more versatile screen. If not, you've got the older screen.

4. To turn off the the inverse video (you just turned it on), type **ESC C 0** (C zero) (again with no spaces) and press **RETURN**. Your screen should return to normal.

All of your video commands will be done with control codes and escape sequences. A control code is a single-character command with an ASCII value less than 32 decimal. An escape sequence is a multi-character command that begins with an ESCape character (ASCII 27 decimal).

Many, but not all, of the screen commands you need

*Look at your screen as
if it were a sheet of
graph paper with 24
rows and 80 columns.*

are built into Turbo Pascal. With MBASIC you have to work a little harder to get the commands sent to the screen. A typical screen control statement in MBASIC looks like this: **PRINT CHR\$(I)**. The **CHR\$** function is built into MBASIC, and its equivalent is present in virtually every language. It converts the integer "I" into the character with the ASCII code of "I." You'll be using this command a lot. It's the easiest way to print control characters on the screen—these are characters that result in the screen being cleared or produce some other action that you want.

Now let's get started with a few of the basic tools of screen control.

Clearing the screen

You might as well start your work with a clean slate (or screen, in this case), and that means you need to clear the screen. Your first command does this and puts the cursor in the upper left-hand corner. It also has an unexpected side effect: Any screen attributes (such as inverse video or low video) are reset when this command is issued. The clear screen function works in all Kaypros.

In Turbo Pascal, clearing the screen is a standard procedure—one that is built into the compiler. (These built-in procedures are not part of standard Pascal, but are provided by Borland International in its version of the language.) Assuming that you have used **TINST** to install Turbo Pascal for your display, simply use the procedure **Clrscr**.

In MBASIC you use **PRINT CHR\$(26)** to do the trick. This sends an ASCII 26 decimal—the code for clearing screen on all CP/M Kaypros—to your screen.

Moving the cursor

Look at your screen as if it were a sheet of graph paper with 24 rows and 80 columns. You need to be able to put the cursor at any point on the screen quickly. Fortunately, the ability to do this is available in all Kaypro models.

In Turbo Pascal you use the built-in procedure **GotoXY**. To move the cursor to a given column and row, the procedure is **Goto(column,row)**. For example, the upper left-hand corner—column 1, row 1 (often called the HOME position)—is reached with **GotoXY(1,1)**. To move the cursor to the 27th column and the 5th row, use **GotoXY(27,5)**.

In MBASIC you have to use a more complicated command. The cursor positioning command for all Kaypros is "ESC = ROW COLUMN" with an offset of 31 added to both row and column numbers. The format of the command is: **PRINT CHR\$(27) CHR\$(61) CHR\$(31 + row) CHR\$(31 + col);**.

Following the above format, then, the statement **PRINT CHR\$(27) CHR\$(61) CHR\$(31 + 1) CHR\$(31 + 1);** sends the cursor to the HOME position; **PRINT CHR\$(27) CHR\$(61) CHR\$(31 + 8) CHR\$(31 + 6);** puts it on the eighth row and sixth column of the screen.

Note the semicolons at the ends of the **PRINT** statements; they're very important. In MBASIC a **PRINT** statement is automatically followed by a carriage return and a line feed unless the line ends with a semicolon. The semicolon keeps the cursor from going to the beginning of the next line, which would ruin what you're trying to do. You'll see in the example program just how important the semicolon can be in screen control work.

Clear to end of line

This command clears the screen from the cursor's current position to the end of the row. It is useful for giving the user a second chance to enter data without clearing the whole screen. Clearing to the end of the line is possible on all Kaypros.

Again, Turbo Pascal has done the work for you. You use the built-in **ClrEol** procedure.

The same command in MBASIC is **PRINT CHR\$(24)**. With this command you've got to be careful of a couple of things. First, you must put the cursor on exactly the line you wish to clear. Second, remember that everything to the right of the cursor is cleared. For example, if the line:

Your Name : Dan Schuster Your Age : 29

appears on our screen, and the cursor is on top of the "D," then issuing this command will erase the "Dan Schuster" and "Your Age : 29" from the screen, when you might really only want to erase "Dan Schuster."

You can easily get around this problem of erasing more than you want. In the above example you would use the move-cursor commands to print blanks to the

screen on top of what you want to erase, stopping when you reach the last character to be erased, the "r" in "Schuster." Then you would return the cursor to where the "D" had been, and let the user try it again.

Low and normal intensity

The '84 series Kaypros have the ability to show their text in two levels of intensity or brightness. This can be useful for drawing the user's attention to important things on the screen. Unfortunately, this is not available on '83 series Kaypros.

In Turbo Pascal you can turn on low brightness with the built-in procedure **LowVideo** and turn on normal intensity with **NormVideo**. (There is also a command in Turbo Pascal called **HiVideo**, which has the same effect as **NormVideo**.)

In MBASIC you use **PRINT CHR\$(27) "B1"** to turn on low intensity, and **PRINT CHR\$(27) "C1"** to switch back to normal brightness.

These commands are examples of screen control *switches*. That is, after issuing the **LowVideo** command (or its MBASIC equivalent) everything that is subsequently printed on the screen, no matter what the location, appears in the dimmer intensity. To regain normal appearance you must issue the **NormVideo** command. Everything typed between the issuance of those two commands appears in the dimmer intensity—thus the commands are like on/off switches.

Inverse video

If you've got WordStar on one of the newer Kaypros, then you see the help menus in inverse video—as black letters on a bright green screen. Inverse video is useful for anything that really needs to be set off from the rest of the screen. Unfortunately, it doesn't exist on the '83 series Kaypros.

For once, Turbo Pascal lets you down. You've got to write your own procedure for using inverse video. Here is one that works nicely:

```
PROCEDURE InVideo(on : Boolean);
BEGIN
  IF on THEN Write(Chr(27), 'B0')
  ELSE Write(Chr(27), 'C0')
END;
```

Notice the **Chr** function. That's Turbo's equivalent of the **CHR\$** function in MBASIC. To turn on the inverse video, use **InVideo(True)**, and to turn it off, use **InVideo(False)**.

In MBASIC **PRINT CHR\$(27) "B0"** turns the inverse video on, and **PRINT CHR\$(27) "C0"** turns it off.

Blinking

If you've really got to get someone's attention, there's

nothing like a blinking light to get it. You can make text flash on '84 series Kaypros, but not on '83 series machines. Large amounts of blinking text can be irritating, so use this command sparingly.

In Turbo Pascal, you write your own procedure.

```
PROCEDURE Blink(on : Boolean);
BEGIN
  IF on THEN Write(Chr(27), 'B2')
  ELSE Write(Chr(27), 'C2')
END;
```

It's switched on and off just like the "InVideo" procedure used earlier.

In MBASIC you use **PRINT CHR\$(27) "B2"** to start the blinking and **PRINT CHR\$(27) "C2"** to stop it.

Underlining

If you'd like everything written to the screen to be underlined, then this command is what you need. Again, this function is only available on the newer Kaypros.

This Turbo Pascal procedure works the same way the "Blink" and "InVideo" procedures do:

```
PROCEDURE Underline(on : Boolean);
BEGIN
  IF on THEN Write(Chr(27), 'B3')
  ELSE Write(Chr(27), 'C3')
END;
```

The command in MBASIC is **PRINT CHR\$(27) "B3"** to start underlining and **PRINT CHR\$(27) "C3"** to stop underlining.

Inserting and deleting a line

If your program requires the user to enter large quantities of text, then you're probably going to have to provide something in the way of editing functions. Kaypro's video command set allows you to insert and delete lines onscreen with a single command. You won't use these commands every day, but they are very useful, and they're available on any Kaypro.

Turbo Pascal provides you with both capabilities as standard functions. **InsLine** inserts a blank line at the cursor position and moves all lines below down one row. **DelLine** deletes the current cursor row and moves all the lines below up a row.

You duplicate these procedures in MBASIC with **PRINT CHR\$(27) CHR\$(69)** to insert a line and **PRINT CHR\$(27) CHR\$(82)** to delete one.

Clear to end of screen

This command works on all Kaypros. It clears the screen from the current cursor position to the bottom of the screen. Why would you want to do this? You might, for example, wish to split the screen with a permanent

message on top and varying text below a given line.
Again, you write your own Pascal procedure:

```
PROCEDURE ClrEos;
BEGIN
    Write(Chr(23));
END;
```

The MBASIC command for clearing to the end of the screen is **PRINT CHR\$(23)**.

Homing the cursor

You can move the cursor to the upper left-hand corner of the screen with the normal cursor movement command. Or, if you're in a hurry, a single character command is available. This command exists on all of the CP/M Kaypros.

In Turbo Pascal, you write the procedure:

```
PROCEDURE Home;
BEGIN
    Write(Chr(30));
END;
```

In MBASIC, you simply use **PRINT CHR\$(30)**.

Remembering the cursor position

Perhaps your program needs to store the current cursor position, move the cursor around for awhile, and then return it to the stored position. If so, in Turbo Pascal you can use:

```
PROCEDURE StoreCursor;
BEGIN
    Write(Chr(27), 'B6');
END;
```

to store the cursor position, and:

```
PROCEDURE ReturnCursor;
BEGIN
    Write(Chr(27), 'C6');
END;
```

to return the cursor to the stored position.

The MBASIC equivalents are **PRINT CHR\$(27) "B6"** to store the cursor and **PRINT CHR\$(27) "C6"** to return to it.

These may be especially useful in combination with the Home command above, but they won't work on the '83 series machines. Also, if you have more than a single cursor position to remember, then you will have to store the positions in variables for later use.

The status line

I lied to you a while ago. I told you your screen had 24 lines. On the '83 series, that's true. But on the others, it really has 25 lines. The extra line, the status line, sits at

the bottom of the screen, and very few programs use it. You can write things on this line just by moving the cursor there, but it's normally not even used for display. What is really interesting is that this area of the screen may be fixed in place, and anything subsequently printed on the screen will scroll normally, leaving the status line unchanged. Further, this status line preservation is maintained through clear screen operations. Note that you should be sure to switch off the preservation of this status line before ending your program. Otherwise it will just sit there until the next time you hit the reset button or some other program clears it.

You can switch preservation of the status line on and off with this procedure in Turbo Pascal:

```
PROCEDURE StatusLine(on : Boolean);
BEGIN
    IF on THEN Write(chr(27), 'B7')
    ELSE Write(chr(27), 'C7')
END;
```

In MBASIC you use **PRINT CHR\$(27) "B7"** to switch the preservation of the status line on, and **PRINT CHR\$(27) "C7"** to free up that line.

What could you do with this? The first thing that comes to mind is to display information you'd like to always be there, no matter what else is going on. In an inventory program, for example, you might have routines to create the data base, update it, print reports, etc. In this case it might be useful to have a status line to indicate which area of the program the user is in at any given time.

Whew! That's a lot of screen control tools. The first few are probably the ones you'll use most. But keep the others in mind—they can really help you put together good looking screens.

Putting it together

Now let's put all of this to work in an example using some of the tools we've discussed. What we want is a good looking screen, with a fast display and easy error correction by the user. Our Turbo Pascal example is found in Listing 1 (below), and a similar version in MBASIC is Listing 2 (on page 40). If you've got an '83 series Kaypro, remove all InVideo, LowVideo, and NormVideo commands, or their MBASIC equivalents.

Listing 1: Program in Turbo Pascal

```
PROGRAM demo;

VAR username : String[20];
    answer : char;

PROCEDURE InVideo(on : Boolean);
BEGIN
    IF on THEN Write(Chr(27), 'BO')
    ELSE Write(Chr(27), 'CO')
END;
```

(continued on page 40)

The ABCs of DDT

How to use this tool for patching programs

by Michael Schwager

If your Kaypro was your first computer, you probably viewed it the way I did mine: as an impenetrable box that had magical qualities. It doesn't take long, however, before the software you once treated as an object of veneration seems more like an old friend. Most of its characteristics you appreciate ... but if only you could change certain others.

This article's intent is to give you that power—the power of patching with DDT. Maybe you'd like to change WordStar so that the default for the print option "Pause for paper change between pages" is Yes. That way, you could just press the ESCape key after naming a file to print—handy if your printer lacks a tractor. No more entering a half-dozen carriage returns just to get to the pause question. It's a minor change, but the bits of time saved add up. This article will show you how.

Or maybe you'd like to change Perfect Filer so that you can continue using it after 1988. That limitation, built into Perfect Filer 1.2, once seemed a long way off, but now it's just around the corner. Using DDT, you'll be able to go to 1999!

"DDT" may ring a bell; it's a chemical, now banned, once used for killing bugs. The DDT I'm talking about kills a different bug—ones that foul up computer programs. This DDT stands for Dynamic Debugging Tool and it's found on your CP/M master disk. (For more on DDT, consult the *CP/M Dynamic Debugging Tool User's Guide* at the back of your CP/M manual.)

You'll read and hear about patches and their addresses (location in the program) in many places; what I'll do here is show you how to implement them.

The process

The programs we're patching are in machine language—code that's directly intelligible to your Kaypro's Z-80 microprocessor. They consist of a series of bytes, each of which tells the computer to do something.

Once you decide which patches you want to make to a program, you load the program into your Kaypro's memory with DDT, modify the appropriate bytes, exit DDT, and save the modified program to disk. It's similar to editing a text file with your word processor—except your word processor can't edit machine language.

Because of DDT's transformational power, you should *always* patch a backup copy. If your patching doesn't work and you've used your only copy of a program disk, you have no usable copy of the program left. You're worse off than when you started. But once you've tested a backup copy of a patched program and found it to work correctly, you're in business. And you can always go back to the unpatched version.

A patch to WordStar

The program we'll patch here as an example is WS.COM, the main WordStar file. I'll assume you have WordStar 3.3, the version that usually comes with Kaypros, and that it's never been patched before.

Because WS.COM uses several accompanying files, you'll copy them to your test disk, too. Use PIP on the CP/M disk, or a public domain program such as SWEEP, to copy the files WS.COM, WSMSG.S.OVR, and WSOVLY1.COM from your working WordStar disk onto a blank test disk. For our example I will also assume that you've copied DDT.COM from the CP/M disk to the test disk along with the three WordStar files.

Now put the test disk in drive A. At the A > prompt, type **DDT WS.COM** and press **RETURN**. After the drives stop turning, you'll see the message "DDT VERS 2.2," and then:

```
NEXT PC
4600 0100
—
```

This means that the program you're patching—WS.COM—begins at address 100 hexadecimal in your Kaypro's memory and ends at 4600 hex. (Hexadecimal numbers are often written with a trailing H or h, such as 100h and 4600h. See the related article on page 38 for information on working with hexadecimal.) Beneath the 4600 is a hyphen, which is DDT's prompt. DDT awaits your command.

For simple patching, you need know only a few DDT commands: **S** sets or changes a byte in memory; a period (.) ends the set command. Also helpful is **D**, which displays the contents of memory. To get out of DDT and back to CP/M, you type **^C** or **G0** (a "G" followed by a zero).

Making the patch

To change the byte in any memory address, you type **S** and the address (location) you want to change. The WordStar address affecting "Pause for paper change between pages" is 03FB. To change it, then, you type **S03FB**. DDT responds as follows:

03FB 00 —

This means that the byte in 03FB is now 00 and that DDT is waiting for you to specify a new byte. The 00 means off; you want to change it to FF, on. Type **FF** and press **RETURN**. DDT enters the new value, goes on to the next memory address, and gives you the chance to change that. You see:

03FC 00 —

What now? To keep a setting as is (if, for example, you called for the wrong address), press **RETURN**. DDT will leave the byte unchanged and go to the next address.

You could go on, but since you're making just the one change for pause between pages, you want to stop the process: Type a period (.) and press **RETURN**.

Again you'll see the hyphen prompt. It's time to exit DDT and save the patched copy of WS.COM. To exit, type **^C**. This takes you back to CP/M's **A>** prompt. At this point you have not made any changes to the file WS.COM on your *disk*; you have changed the copy of WS.COM in your computer's *memory*. Now you'll copy the patched program in memory onto your test disk and write over the version of WS.COM that is already there. For that you use CP/M's **SAVE** command.

Saving the patched program

As soon as you exit DDT, type **SAVE 69 WS.COM** and press **RETURN**. This format is crucial to patching with DDT. It tells CP/M to **SAVE** the first 69 "pages" in your Kaypro's memory under the file name WS.COM. The **SAVE** and WS.COM are clear enough; the tricky part is the 69 pages. Here's what that means.

A page is 100h bytes in memory. You may recall that after you loaded DDT, the program showed 100 under the letters PC, and 4600 under the word NEXT. This says that WS.COM begins at 100h and extends to 4600h. Thus, WS.COM contains 4500h bytes (4600 minus 100). Dividing 4500 by 100 (since each block of 100h bytes is a "page" of memory), we see that WS occupies 45h pages.

(Want a shortcut? Drop the two rightmost digits of the NEXT number and subtract one. With 4,600, for example, dropping the two zeros gives 46. Subtracting 1 gives 45.)

Your mental gyrations aren't over, however. With the **SAVE** command, you don't use hex; you use decimal. So now you have to convert 45h to decimal.

If you read the accompanying article, you know how to do that: 45h is 69 decimal. Thus "SAVE 69 WS.COM."

When you patch some programs, the two rightmost digits of the NEXT number will not be zeros, indicating that the program takes up a portion of the next page of

Hexadecimal Primer

To patch with DDT, you have to understand some things about the hexadecimal, or base 16, numbering system. Any numbering system uses the number of digits in the base, and the base itself is represented by the numeral 10. The base 10, or decimal, system uses ten digits, 0 through 9. The base 2, or binary, system uses two digits, 0 and 1; 10 represents the decimal number 2. Base 16 uses 16 digits; 10 represents the decimal number 16.

But what's this about 16 digits? What digits can you use besides 0 through 9? Letters. Base 16 uses the numerals 0 through 9 and the letters A through F. A represents the decimal 10; B is 11; C, 12; D, 13; E, 14; and F, 15. In base 16, the sequence from decimal 0 to 16 is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10.

As you'll remember from elementary-school arithmetic, the decimal number 29, for example, breaks down this way, starting from the right: 9 units in the 1's place (equals 9) plus 2 units in the 10's place (20), for a total of 29.

What you may not have learned is that each place is a power of 10. The 1 of the 1's place is 10 to the 0 power; the 10 of the 10's place is 10 to the first power; and so on. 100 is 10 to the second power.

In base 16 the places are in powers of 16: 1 (16 to the 0 power), 16 (16 to the first power), 256 (16 to the second power), and so on.

Starting from the right, the hexadecimal number 29 (29H or 29h) is 9 times 1 (equals 9 decimal) plus 2 times 16 (32). Add the numbers in parentheses, and you find that 29h equals the decimal number 41.

In this manner you can convert any hexadecimal number to decimal. Start from the right and convert the rightmost digit to decimal. Take the second digit from the right, convert it to decimal, and multiply by 16. Convert each succeeding digit to decimal and multiply that by the appropriate power of 16. Then add the results of the multiplications.

For example, the hexadecimal number after 29h is not 30h, but 2Ah. To convert 2A to decimal, convert A to decimal (10) and to that add 2 times 16 (32). The total is decimal 42, one more than 41.

Converting decimal numbers to hex is a somewhat similar procedure in reverse. I'll use 42 as an example, since you've already seen its conversion from hex.

First, take the decimal number and divide it by 16 (42/16 = 2 with a remainder of 10). Thus there are 2 units of 16, which you convert to hex: 2 decimal = 2h. Use that as your left figure. Now convert the remainder (10) to hex (10 decimal = Ah) and use that as the right figure. Hence the answer, 2Ah.

With practice you'll succeed at this. Don't worry if, the first few times, you feel a trifle hexed.



—Michael Schwager

memory. When you SAVE these programs include that page by dropping the two rightmost digits, but *don't* subtract 1. If the NEXT number is, say, 0985, drop the 85. That leaves 09—9h pages (9 hexadecimal is the same as 9 decimal). The ninth page is not a full 100h bytes, but the program does carry over to it.

If you attempt to save a program that already exists on disk, DDT will ask whether you want to replace it. Reply with Y (for yes) unless you want to keep the old version. In that case, type SAVE and the proper length and a new file name.

Displaying bytes in memory

Another DDT command for patching is D. D displays the contents of your computer's memory. Whereas the S

The DDT command D lets you display a whole page of memory, whereas the S displays only one byte.

command shows one byte in memory at a time, D displays a whole page (256 bytes) of memory. It also shows the ASCII equivalent of each byte in memory.

(ASCII is a standard for representing computer characters. For example, the byte that your computer sees as 40h [64 decimal] is represented by the ASCII letter A. Only the characters between 20h and 7Fh appear as ordinary letters, numbers, and punctuation; below 20h and above 7Fh are "control" and other nonprinting characters. The ASCII part of the DDT display shows them as periods. A list of ASCII characters, along with their decimal and hex counterparts, appears in the *Kaypro User's Guide*.)

The display has 16 lines, and each line has 16 bytes. So the number of bytes displayed altogether is 16 times 16, which is 256 decimal, or 100h.

The page displayed depends on where you are in memory. After you load DDT and the program to be patched, typing D (with no address specified) will display a page of bytes beginning at address 100h. If you've moved to a different memory address, say with the S command, typing D will display a page beginning at the new address. Typing D and an address will display a page of memory beginning at that address.

To see what I'm talking about, reenter DDT. At the A> prompt, type **DDT WS.COM** and press **RETURN**. At the hyphen prompt, type **D03F0** and **RETURN**. As I mentioned before, the memory address of the Pause-between-pages byte in WordStar 3.3 is 03FB. It appears on a line beginning with address 03F0. If you typed D03FB rather than D03F0, it would display an incomplete first line—not desirable.

If you've made the patch I've outlined here and no

other changes, you should see the display shown in Figure 1.

Figure 1: DDT Dump

```
03F0 32 33 34 35 36 37 38 39 00 00 00 FF 00 00 FF FF 23456789.....
0400 00 57 53 20 20 20 20 20 20 43 4F 4D 00 57 53 4D .WS COM.WSM
0410 53 47 53 20 20 4F 56 52 00 57 53 4F 56 4C 59 31 SGS OVR.WSOVLY1
0420 20 4F 56 52 00 4D 41 49 4C 4D 52 47 45 4F 56 52 OVR.MAILMRGEVR
0430 00 00 00 00 00 00 00 00 00 00 00 08 04 00 00 01 .....
0440 0E 00 02 01 08 00 04 01 18 00 2D 2D 10 00 06 01 .....
0450 00 00 08 01 19 00 0A 01 06 00 80 29 1A 00 BA 29 .....
0460 17 00 C1 29 0C 00 16 01 12 00 0C 01 0F 00 12 01 .....
0470 05 00 14 01 16 00 9A 30 13 00 0E 01 00 00 00 00 .....
0480 00 00 00 00 00 00 00 00 11 FF 12 00 08 FF 16 .....
0490 00 0F FF 1E 00 0A FF 22 00 0A 08 04 01 13 00 DA .....
04A0 63 08 00 DA 63 04 00 D0 63 01 00 03 64 06 00 39 c...c...d...9
```

If you haven't changed the byte from 00 to FF, the first line of the display will be slightly different:

Figure 2: Alternate First Line

```
03F0 32 33 34 35 36 37 38 39 00 00 00 00 00 00 FF FF 23456789....
```

Focus on the first line of Figure 1. You can think of it as having three parts. Part one is a number (03F0) indicating the first memory address on the line. Part two (which begins with 32 and ends with FF) is the series of bytes, in hex, contained in address 03F0 and the next 15 addresses. Part three is a block showing the bytes in ASCII (23456789).

03F0 is the first location whose byte you see; its byte is 32h. 32h is represented by ASCII 2. Thus the 2 is the first character in the ASCII block.

The 33 to the right of 32 is the byte in address 03F1; 34 is the byte in 03F2, and so on. The last address on the line—containing the byte FF—is 03FF. In hex, the number after 03FF is 0400, which begins the second line of Figure 1.

03FB, the address we're concerned with, is fifth from the right on the first line. Its contents are FF, meaning "on." Therefore, the pause-between-pages setting is on.

00, which means "off," is the byte in memory address 03FC and in 03FD. Because both 00h and FFh are nonprinting characters, they appear in the ASCII block as periods.

The display command gives a broader view of bytes in memory than the S command, because it shows 256 bytes at a time. And because it shows text in ASCII characters, it is especially helpful in examining the text parts of programs.

When all bytes are as you want them, exit DDT with a **^C**. If you made any changes this time, type **SAVE** and the proper terminology as described under "Saving the patched program" above. If you made no changes, there's no need to SAVE.

Testing

Now that you've patched WordStar and seen with D that the relevant byte is correct, you should test the patched program. In any patching, it's best to test the specific changes you've made, as well as the program in general. Any files you use for testing should be backup copies, so that you don't damage anything irretrievably.

With the patched WordStar disk in drive A, put a disk

with backup copies of text files in drive B. Type **WS** and, at WordStar's Opening Menu, **P** to print a file. When WordStar asks for a file name, respond and press **RETURN**. Now you'll see a series of questions beginning with "Disk file output (Y/N)." Press **RETURN** in reply to each question until you get to "Pause for paper change between pages." Now you've reached the moment of truth.

Before you patched the program, WordStar's default here was No; to pause, you had to type Y. Now, though, the default should be Yes. Hit **RETURN**. Did WordStar reply with Y? If so, the patch worked. If not, it's back to the patching board.

When the program is working as it should, use it the

*The key is knowing
that you've made only
the changes you wanted
and left all else as is.*

way you usually do. Change the logged drive; do some editing; move a block or two; save a file. After you've done all that, you can be reasonably confident that the patched program is okay and that you can start using it as your working copy of WordStar. The key is knowing that you've made only the change or changes you wanted and left everything else as is.

For Perfect Filer fans

Earlier I mentioned a patch to Perfect Filer 1.2. The patch, courtesy of David Porritt of Plano, Texas, appeared on page 8 of the October 1985 issue of *PRO-FILES*. With it, you can conveniently use Perfect Filer beyond 1988.

The part of Perfect Filer to be patched is a file called **SETUP**, and the relevant memory address in that file is 0715. The byte in that address, as **SETUP** is distributed, is 58h (which is the decimal number 88). Change it to 63h, and you can use Filer through 1999!

And beyond

Although these are the basics of patching with DDT, you can do much more. Once you begin to understand how programs are put together—or even sooner, if you're adventurous—you can experiment with patches of your own. Eventually your old programs will appear to have gone through some dramatic makeovers. At their essence, however, they'll still act like trusted old friends.

Michael Schwager is a writer and editor in Bala Cynwyd, Pennsylvania.

SCREEN CONTROL

(continued from page 36)

```
BEGIN
  ClrScr;
  GotoXY(25,12);
  LowVideo;
  Write('Your name : ');
  REPEAT
    NormVideo;
    Read(username);
    GotoXY(26,24);
    LowVideo;
    InVideo(TRUE);
    Write('Is this correct? ');
    Read(answer);
    InVideo(FALSE);
    IF NOT (answer IN ['Y', 'y']) THEN
      BEGIN
        GotoXY(1,24);
        ClrEol;           { clear bottom line}
        GotoXY(37,12);
        ClrEol           { clear previous username}
      END;
  UNTIL answer IN ['Y', 'y'];
  ClrScr
END.
```

Listing 2: Program in MBASIC

```
10 PRINT CHR$(26)
20 PRINT CHR$(27) CHR$(61) CHR$(31+12) CHR$(31+25);
30 PRINT CHR$(27) "B1";
40 PRINT "Your name ";
50 PRINT CHR$(27) "C1";
60 INPUT USERNAMES
70 PRINT CHR$(27) CHR$(61) CHR$(31+24) CHR$(31+26);
80 PRINT CHR$(27) "B1";
90 PRINT CHR$(27) "B0";
100 PRINT "Is this correct";
110 INPUT ANSWERS
120 PRINT CHR$(27) "C0"
130 IF ANSWERS = "Y" OR ANSWERS = "y" THEN GOTO 190
140 PRINT CHR$(27) CHR$(61) CHR$(31+24) CHR$(31+1);
150 PRINT CHR$(24)
160 PRINT CHR$(27) CHR$(61) CHR$(31+12) CHR$(31+35);
170 PRINT CHR$(24);
180 GOTO 50
190 PRINT CHR$(26)
200 END
```

Final comments

Getting your screen to look exactly as you wish may not seem to be an important aspect of programming, but it's more important than you might think. Proper screen control focuses a user's attention on what's important, promotes precise communication of what the user needs to do, and provides an environment that allows users to easily do what's asked of them. And that's pretty important stuff.

Daniel L. Schuster has a master's degree in mathematics from Eastern Washington University and teaches math and computer science at the College of Eastern Utah.

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Department	% of Total	1986	% of Total	1985	% of Total	1984	% of Total	1983	% of Total
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2. Hosiery	238.8	12.8	237.5	10.4	228.2	12.8	221.5	12.1	221.5
3. Socks	75.0	4.0	75.0	4.0	75.0	4.0	75.0	4.0	75.0
4. Hosiery Appliances	262.0	13.6	262.0	13.6	262.0	13.6	262.0	13.6	262.0
5. Hosiery	282.0	14.8	282.0	14.8	282.0	14.8	282.0	14.8	282.0
6. Hosiery	332.0	17.3	332.0	17.3	332.0	17.3	332.0	17.3	332.0
7. Hosiery	382.0	20.0	382.0	20.0	382.0	20.0	382.0	20.0	382.0
8. Hosiery	432.0	22.7	432.0	22.7	432.0	22.7	432.0	22.7	432.0
9. Hosiery	482.0	25.4	482.0	25.4	482.0	25.4	482.0	25.4	482.0
10. Hosiery	532.0	28.1	532.0	28.1	532.0	28.1	532.0	28.1	532.0
11. Hosiery	582.0	30.8	582.0	30.8	582.0	30.8	582.0	30.8	582.0
12. Hosiery	632.0	33.5	632.0	33.5	632.0	33.5	632.0	33.5	632.0
13. Hosiery	682.0	36.2	682.0	36.2	682.0	36.2	682.0	36.2	682.0
14. Hosiery	732.0	38.9	732.0	38.9	732.0	38.9	732.0	38.9	732.0
15. Hosiery	782.0	41.6	782.0	41.6	782.0	41.6	782.0	41.6	782.0
16. Hosiery	832.0	44.3	832.0	44.3	832.0	44.3	832.0	44.3	832.0
17. Hosiery	882.0	47.0	882.0	47.0	882.0	47.0	882.0	47.0	882.0
18. Hosiery	932.0	49.7	932.0	49.7	932.0	49.7	932.0	49.7	932.0
19. Hosiery	982.0	52.4	982.0	52.4	982.0	52.4	982.0	52.4	982.0
20. Hosiery	1032.0	55.1	1032.0	55.1	1032.0	55.1	1032.0	55.1	1032.0
TOTAL	1941.1	100.0	1941.1	100.0	1941.1	100.0	1941.1	100.0	1941.1
Toy Department									
1. Toys	448.0	23.1	448.0	23.1	448.0	23.1	448.0	23.1	448.0
2. Toys	498.0	25.7	498.0	25.7	498.0	25.7	498.0	25.7	498.0
3. Toys	548.0	28.4	548.0	28.4	548.0	28.4	548.0	28.4	548.0
4. Toys	598.0	31.1	598.0	31.1	598.0	31.1	598.0	31.1	598.0
5. Toys	648.0	33.8	648.0	33.8	648.0	33.8	648.0	33.8	648.0
6. Toys	698.0	36.5	698.0	36.5	698.0	36.5	698.0	36.5	698.0
7. Toys	748.0	39.2	748.0	39.2	748.0	39.2	748.0	39.2	748.0
8. Toys	798.0	41.9	798.0	41.9	798.0	41.9	798.0	41.9	798.0
9. Toys	848.0	44.6	848.0	44.6	848.0	44.6	848.0	44.6	848.0
10. Toys	898.0	47.3	898.0	47.3	898.0	47.3	898.0	47.3	898.0
11. Toys	948.0	50.0	948.0	50.0	948.0	50.0	948.0	50.0	948.0
12. Toys	998.0	52.7	998.0	52.7	998.0	52.7	998.0	52.7	998.0
13. Toys	1048.0	55.4	1048.0	55.4	1048.0	55.4	1048.0	55.4	1048.0
14. Toys	1098.0	58.1	1098.0	58.1	1098.0	58.1	1098.0	58.1	1098.0
15. Toys	1148.0	60.8	1148.0	60.8	1148.0	60.8	1148.0	60.8	1148.0
16. Toys	1198.0	63.5	1198.0	63.5	1198.0	63.5	1198.0	63.5	1198.0
17. Toys	1248.0	66.2	1248.0	66.2	1248.0	66.2	1248.0	66.2	1248.0
18. Toys	1298.0	68.9	1298.0	68.9	1298.0	68.9	1298.0	68.9	1298.0
19. Toys	1348.0	71.6	1348.0	71.6	1348.0	71.6	1348.0	71.6	1348.0
20. Toys	1398.0	74.3	1398.0	74.3	1398.0	74.3	1398.0	74.3	1398.0
TOTAL	2141.1	100.0	2141.1	100.0	2141.1	100.0	2141.1	100.0	2141.1

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Planning a Program with Flowcharts

An alternative to pseudocode

by Jerry Houston

Last month we explored the idea of planning a computer program using pseudocode. This “false code” lets you plan your program unencumbered by the finicky rules of syntax common to programming languages. In that article I pointed out that some programmers use both pseudocode and flowcharts to plan their programs, but that many prefer one over the other. In my experience pseudocode is most often written by business programmers, and flowcharts are most often used by scientific and mathematical programmers. A lot of programmers prefer the graphic symbols of flowcharts, and they feel that the connecting lines and arrows convey a sense of the actual flow of logic within a program more strongly than the “sentences” and “paragraphs” of pseudocode.

Besides helping to keep you on track while you design a program, a flowchart is of immeasurable value if it becomes necessary to modify the program at a later date. Sometimes it isn't immediately clear just what a section of program code really does, or why, and a flowchart will help the maintenance programmer figure it out. Often the original author needs the same kind of help to make changes only a few days or weeks after writing the code.

In this article, I'll cover the basics of planning a program using a flowchart. If you want to learn more, see my suggestions at the end of this article.

Flowcharts

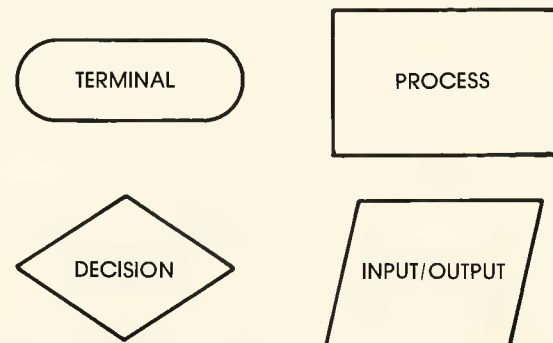
Whereas pseudocode resembles sentences and paragraphs without the punctuation, flowcharts are definitely diagrams. They depict very graphically the flow of control in a program, in addition to specifying the instructions to accomplish tasks.

Let me take a moment now to differentiate between

program flowcharts and systems flowcharts, because in your study you may find references to both kinds. System flowcharts are made by systems analysts to depict the resources available to a computer system (disk drive units, printers, etc.) and to show the relationships among programs that are part of the overall data processing system. They use different symbols than the ones for program flowcharting. System flowcharts have no bearing on program planning and will not be discussed further in this article.

Program flowcharts are written using special symbols to indicate the processes within a program. Some of the most common program flowchart symbols are shown in Figure 1. Notice that the symbol for an input operation is just like the one for an output operation—the comments inside the symbol must make it clear which type of operation it is.

Figure 1: Most Common Flowchart Symbols



Main program logic

In last month's article on pseudocode I explained that the first step in solving a complex programming problem is to break it down into smaller tasks. I also explained that a problem will usually fit into what is called “standard mainline logic,” such as the following:

MAIN LOGIC MODULE

START

PERFORM housekeeping routines

WHILE more-to-do is TRUE

 PERFORM process

ENDWHILE (more to do)

PERFORM end-of-job routines

STOP

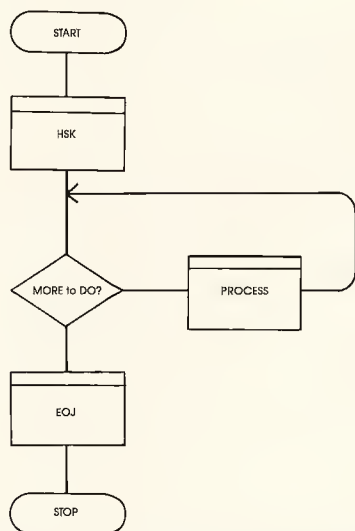
This logic is appropriate as a first step, for it breaks a large task down into three smaller tasks:

- housekeeping routines—things that need to be done only once, and only at the beginning of a program;
- the main process—steps that are executed repeatedly until the reason for running the program no longer exists (all data has been processed);
- end-of-job routines—things that are done only once, and always at the end of a program, following the normal processing.

Of course, each of these tasks is likely to require further breakdown into smaller, simpler tasks before actual program coding begins.

Here's how the standard mainline logic would look in a program flowchart:

Figure 2: Standard Mainline Logic



Notice a couple of flowcharting conventions that are shown here. In the absence of arrows to indicate otherwise, the flow of control is sequential (one step follows another) and is depicted in a flowchart from top to bottom, and from left to right, just as we normally would read a page of text. If the flow of logic must go up or to the left, and there's any chance for misunderstanding, then arrows are used for clarity.

Ordinarily, when a decision (represented by the diamond-shaped symbol) is made and the answer is "YES" or "TRUE," it may be assumed that the branch to the right is to be taken, and if it is "NO" or "FALSE," then control goes to the left or straight down. This can be changed or clarified by putting the letters "Y" and

"N" at the exits of the decision symbol, indicating which way is which.

Looking at this flowchart, we can see the relationship between it and the pseudocode for the same logic. In fact, if the same words are used in each, we should be able to listen to someone read the pseudocode while we trace through the flowchart, and they should be identical.

Obviously this flowchart isn't complete—it mentions three other processes that are not yet diagrammed (HSK, PROC, and EOJ). It is a rule of flowcharting, just as it is in pseudocoding, that the logic isn't finished until each task is designed completely. In pseudocode, we know we're not finished if we say something like "PERFORM some-process" and "some-process" doesn't yet have its own little section of pseudocode to show what happens there. We usually call these separate sections "modules" in pseudocode and refer to them as "processes" in flowcharts, though either name would be appropriate in either case. Many people find it simpler just to refer to them as "routines."

Program requirements

A real example would be useful now, so let's think of a problem to solve with the computer. How about a very simple word processor that makes labels for disks or for mailing purposes? Anyone who doesn't already have such a program could probably use one, and it could easily be coded in any language from the flowchart we're about to design.

We'd want to be able to specify how many copies of a label to make and then enter up to four lines of text. The program would cycle as long as we didn't specify zero for the number of labels to print.

Though it might seem backwards, the place to start designing any program is at its output. Since the output is the *product* of a program—its whole purpose in life—the program is, to a great extent, defined by the output it produces. Let's get specific:

- the program will produce regular 1 x 3-1/2-inch mailing labels;
- with a standard printer, we can expect to have four lines of text, each containing 30 characters or less, leaving one blank line as a margin at the top and at the bottom of each label, and a quarter-inch margin at the right and at the left;
- the labels will be supplied in a continuous form, like fan-fold printer paper, and we'll leave it up to the user to be sure enough labels are available.

The finished products might look like these:

Disk #: Format:
Contents:

Bob's Disk Drive Service
123 Pleasant Street
George, WA 98321
(206) 555-7718

Define the input

In our program, all required input will be done from the keyboard by the user. We'll need to know how many copies of a label to make and what to print on the four available lines. In the more complex programs that you will probably write in the future, the situation will not be that simple. In the future you will probably have to deal with input from one or more data files in addition to operator input. In that situation you'll need to make sure that the data files are available and that you know the record format of each file—how the data fields in each record are laid out. As you gain experience, planning steps that seem complex now will be easier, but for your initial exposure to flowcharting, we'll stay with the fairly simple input situation used here.

Processing comes last

The last step is to determine what processing steps are required to produce the desired output. Let's look at this problem for a minute without using pseudocode or a flowchart. Just think about "stepwise refinement"—breaking the overall task down into small, easy-to-visualize steps.

First, to make the program user-friendly, we'll want to provide a screen of prompts that show what informa-

tion is needed from the user. These prompts should also make it clear to the user how to exit from the program when it is appropriate. (The latter provision—how to exit the program—is something many novice programmers don't think about enough.)

It seems appropriate, since we want to ask how many copies of a label to print, to take an input of zero to mean it's time to quit the program. That's uncomplicated and intuitive. Going a step farther, we could even provide zero as a default, a value that the program will use unless the operator specifically supplies another answer. That way, just pressing RETURN when asked "How many copies?" would be enough to quit.

In keeping with our goal of user-friendliness, we might want to ask "Are you sure?" before actually quitting, but that's often a matter of personal taste. Since no disastrous consequences would result from inadvertently quitting this particular program, that might be taking user-friendliness a little too far. (Keep in mind, though, that in other programs the decisions users might make could result in vast amounts of work being ruined, or important data being lost forever. In those cases, we should always ask "Are you sure?" to allow users to change their minds before exiting the program.)

(continued on page 46)

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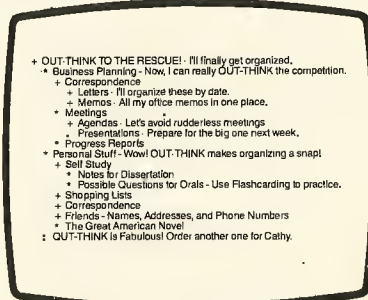
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Flowchart Symbols

Here's a summary of the symbols used in program flowcharting. Incidentally, the easy way to draw them is with a plastic flowchart template. A good one is made by IBM, and it is literally sold by the hundreds in most college bookstores and many computer supplies stores for less than a dollar. Beware of the slightly different versions made by ruler manufacturers—the ones I've seen are no better and cost several times as much. Don't spend \$4.95 for a plastic template without looking farther for the IBM version.

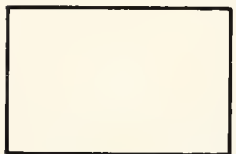
(The additional symbols you'll see on your template that aren't shown here are those used for systems flowcharts. As noted in the accompanying article, systems flowcharts have nothing to do with program design and are outside the scope of this discussion.)

Terminal symbol



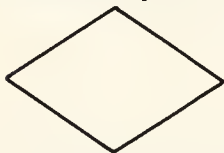
Used in pairs to show the beginning and the end of a program or routine. A program (the main logic) starts with the word "START" in one terminal symbol and ends with the word "STOP" in another. A routine starts with the routine's name and ends with the word "EXIT."

Sequential process symbol



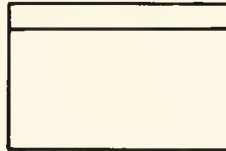
A sequential process is an ordinary step in a program that is so simple it doesn't require further refinement. It usually represents something that can be accommodated with one or two programming language statements.

Decision symbol



A decision symbol is used whenever there is a need to indicate a choice. Decisions are represented in many languages by the keyword "IF." However, the case structure in Pascal and the switch statement in C are additional examples of more complex decisions.

Predefined process-routine symbol



As you've seen, a predefined process is a part of the overall program that can be defined as a separate task in its own right. Rather than immediately concern ourselves with its details, we can use a symbol like this and just give it a name. We have to be careful, however, to fully define our processes before we consider the flowchart to be complete and start coding from it, or something important is sure to be left out.

Input/output symbol



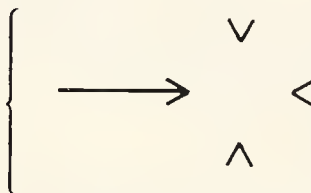
The same symbol is used for both input (like getting an answer from the user or reading a file record) and output (like displaying the prompts for the user or writing something on the printer), so it's necessary to make the purpose clear with the wording inside the symbol.

Preparation symbol



Seen less often than the others, the preparation symbol indicates the need for some sort of manual preparation. This might mean taking a break to change the printwheel in a letter-quality printer or to change a switch on a piece of peripheral equipment.

Other symbols



A flowchart template also includes a complete set of arrows to make it clear in which direction the logic flows, large curly braces for comments, and informative scales (rulers) that show inches in popular print sizes like eighths, tenths, twelfths, and fifteenths.



The small round circle is used as a connector symbol, usually with a letter inside it. Control flows from one connector symbol to its matching symbol elsewhere on the page, an alternative that's sometimes useful for replacing confusing, criss-crossed flow lines. The little connector symbol that looks like home base at a softball diamond is IBM's own symbol, not one that's generally used, and it denotes off-page connections. There's room for a page number in addition to the letter.



FLOWCHARTS
(continued from page 44)

If the answer to "number of copies to make" is not zero, we'll print four blank lines of 30 characters each on the screen as a guide to the user. If he just fills in our format, he'll know his text will fit on a label properly. At this point, the screen might look something like this:

```

—LABEL MAKER PROGRAM—
How many copies to print? —
      (Enter 0 to Quit)

      Enter Label Text Here:

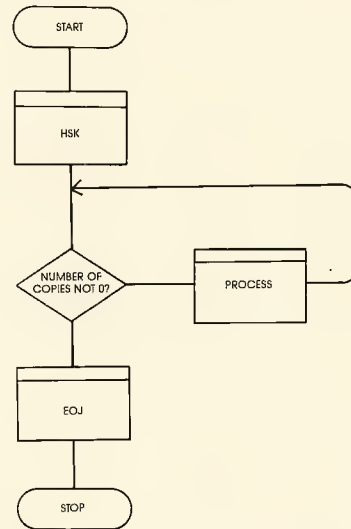
Line 1  :                               :
      2  :                               :
      3  :                               :
      4  :                               :
  
```

Since only four lines will be accommodated in this program, it will be a simple matter to start the printing process when RETURN has been pressed after the last line is entered. If a label is to have fewer lines (like the disk label), the user will just press RETURN for each blank line.

After the required number of copies are printed, a fresh screen is presented and the user is again asked how many copies are needed for the next label. If a non-

zero answer is given, the format of the label is presented again, and the whole process repeats itself. We can now put the highest-level routines into a mainline logic flowchart and begin thinking about the lower-level routines and whether they need to be split up any further. Figure 3 shows the main logic.

Figure 3: Mainline Logic for Label Program



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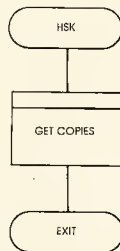
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Refinement

It's important to understand that Figure 3 shows our whole program, although not in much detail. We need to continue designing our logic until each process has been refined in its own separate flowchart in enough detail that the program can actually be written from the flowcharts. There must be no chance of leaving anything out.

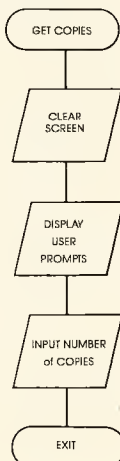
Let's refine our program now. What needs to be done during housekeeping (HSK)? For one thing, we need to prompt the user to find out how many copies of the first label to make. Our main logic depends on knowing this by the time we get to the decision about whether to do another. (If the number of copies is zero, we will not do another.) This points out one of the most important reasons for formal planning before writing a program: Every step of the process can be checked to be sure that all requirements up to that point have been met properly. Our flowchart makes it clear that the first input must come from the user in the HSK routine. Figure 4 shows our HSK routine in more detail.

Figure 4: HSK Routine



We need to do several things in the HSK routine, including clear the screen, display the prompt for how many copies to print, and get the answer. And since we'll need to do the same things from the PROCESS routine, too, we can turn these steps into a predefined process called GET COPIES. Figure 5 shows what GET COPIES entails.

Figure 5: GET COPIES Routine



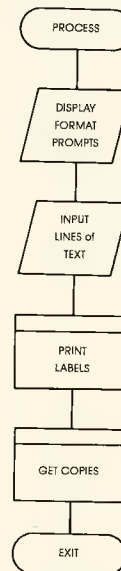
Notice that in this particular program, GET COPIES is all HSK does, but it's only one of several things that PROCESS does. The only reason to have a HSK routine that only calls the GET COPIES routine (instead of just using the GET COPIES routine by itself) is that future modifications or enhancements to the program are likely to add some more things for HSK to do. It will cause the least disruption when you modify the program in the future if there is a standard HSK routine in the program from the beginning.

Assuming there is a non-zero answer to the question about the number of copies to make, we know that we'll

Each process must be refined in detail so the program can be written from the flowchart.

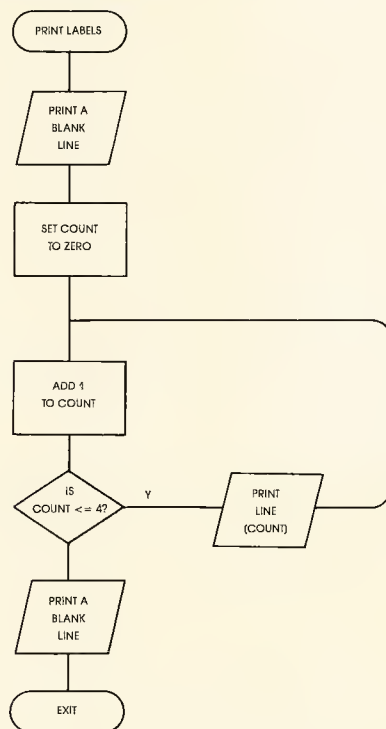
be executing our PROCESS routine. What needs to be done in there? The PROCESS routine is where we'll actually print the labels, but before we can do that we'd better find out what to put on them. Figure 6 shows the PROCESS routine.

Figure 6: PROCESS Routine



Since they will take only a few simple statements and the processing is not complex, we can specify the small tasks of displaying the format prompts and getting the label text from the user with just a couple of input/output symbols. If these tasks were more involved, as is the step that actually prints the labels, we'd want to write them as a predefined process, as we have with the PRINT LABELS routine shown in Figure 7, and refine them some more as a separate routine.

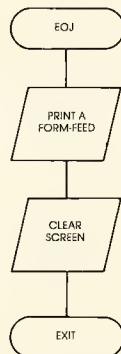
Figure 7: PRINT LABELS Routine



Once we know what to put on the labels, PRINT LABELS comes next, then GET COPIES again, so we know whether to print another batch or to quit.

Finally, we come to the end-of-job (EOJ) routine, shown below.

Figure 8: EOJ Routine

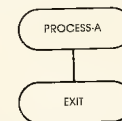


About all that EOJ will do in this program is send a form-feed to the printer (to make it easier to tear off the labels at the perforation) and clear the screen before handing control back to the operating system. Even though these end-of-job steps might be dispensed with for a particular program, EOJ should still exist in the flowchart, if not in the program code, for the same reasons that HSK should always appear.

When it's necessary to show that a routine exists, even if there are not yet any steps to show in it, it's customary to write it with just the two terminal symbols. That way, a maintenance programmer knows instantly that the missing steps are not an error, and that the process was defined for a reason, even though

it's currently empty.

Figure 9: NULL PREDEFINED PROCESS



Remember, at this point in the development process there's no need to concern ourselves with the petty details of a particular computer language. We're able to think in terms of larger tasks, like PRINT LABELS and GET COPIES, and to develop the overall program logic.

This is one of the most important concepts in the program design process, and it bears repeating here. Start with an overall problem that's too complex to solve easily. Break it down into comprehensible tasks, such as HSK, PROC and EOJ, and define the relationships among the tasks. Use flow lines with arrows and show what happens as a result of a decision.

Continue to refine these steps, breaking each of them into smaller and smaller tasks, until at last they can all be expressed clearly and simply in just a statement or two. At that point, they're ready to be coded according to the syntax of your programming language.

Where to learn more

This was a very short course in flowcharting, but it covered most of the basics. Entire textbooks have been written on the subject, and computer science students spend months studying flowcharting and logic design.

If you're interested in finding out more about program design than I've been able to present in these articles, I recommend that you contact your nearest community college and find out what classes are offered. Check both with data processing (usually in the business department) and computer science (usually in the math and science department), because they often offer different courses.

One good book on the subject, with an emphasis on business programming, is *Business Programming Logic*, second edition, by Jay Singelmann and Jean Longhurst (Prentice Hall, NJ). It's used in many college courses, but it's also a text that most people can follow pretty well on their own. It has many design examples using both flowcharts and pseudocode, along with matching programming examples in BASIC and COBOL. In addition, many other programming language texts that contain the word "structured" in their titles can be expected to offer at least a little information on the subject.

Jerry Houston teaches programming, applications, and other related topics at three colleges and writes for several computer publications. He is currently writing a book on the C language.

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MESSAGE

FILE TRANSFERS

UTILITY SYSTEM

Accessing KUG ROS

A navigational aid for users of Kaypro's BBS

by James Durkin

If you've been reading *PROFILES* for a few months, you're probably aware that Kaypro Corporation has its own electronic bulletin board, KUG ROS: Kaypro Users Group Remote Operating System. Kaypro Corporation began an online system for the support of its users groups and owners in April 1985. KUG ROS is the latest version of this electronic support, begun in January 1986, and it serves both as an information exchange and as a repository for public domain software, including that mentioned in "Flea Market" and elsewhere in the pages of *PROFILES*.

The magazine has received a number of requests for an article about accessing KUG ROS, and what follows below should provide the necessary information.

Users can access three interrelated systems after successfully logging on to KUG ROS: the Message System, the File Transfer System, and the Utilities System. Each system within KUG ROS has its own menu of commands that's displayed automatically, and help is always just a keystroke away.

I'll describe some of the characteristics and quirks of KUG ROS first, along with a brief description of the commands; then we'll "walk through" the log-on procedure, and finally we'll look at the three interrelated systems.

The system

KUG ROS is a KAYPRO PC-10 operating at 300/1200 baud, 24 hours a day, from 619/259-4437. The software program in control is version 3.5 of Steven Fox's ROS (Remote Operating System), which was written entirely in Turbo Pascal.

A unique feature of ROS is that it never allows users to access the operating system; all functions are accomplished within the program, including file transfers. (The BBS was previously run on a Kaypro 10, and its software *did* allow access to the operating system.) The addition of sysop-defined access levels for users provides airtight security for KUG ROS.

After logging on, new users have 15 minutes to use the system, and validated users have 60 minutes. These are daily limits, and they are imposed so that the system cannot be tied up for hours by one user. Throughout your travels in KUG ROS you will be accompanied by a system prompt that will tell you the number of minutes you have left, which of the three

systems you're in, and which area within that system you're in.

A menu of commands is always available, no matter where you are in the system; to call it up, just enter a question mark. A command generally consists of just one character, and usually no carriage return is necessary to activate it.

On the menus, the character that evokes the command is enclosed within angle brackets. For instance, to <C>hange the message area to BBS (that is, to get from the area you're in to the area called "BBS"), type a C—either upper or lower case—and without pressing the space bar enter **BBS**, then a carriage return. (If you hit the space bar, ROS won't understand.)

Logging on

"... GREETINGS! ... WELCOME TO KUG ROS! ..."
This is the welcome message. There's nothing tricky here, so you can relax before confronting more complicated steps.

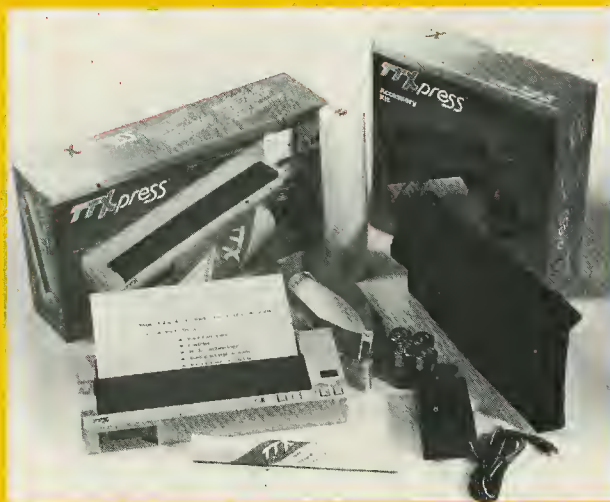
Next you are asked for your first and last names. All letters are converted to upper case during processing, so you can enter your name in either upper or lower case. Users who give "handles" rather than their true names will not be validated by the sysop. This rule strengthens system security and simplifies addressing mail and messages.

KUG ROS searches its user file for the name you've entered. If it's not found, you're asked if you are a new user. If you are not a new user—if you're already registered—you may have made a typo while entering your name. Enter **N** and you'll get another crack at typing your name correctly. If you *are* a new user, enter **Y** at this point.

New users must now confirm their systems' ability to display lower-case letters (all Kaypros can), and they must also designate the number of nulls their systems require. Nulls are empty characters that are transmitted before each new line of text is transmitted. They are intended to give a terminal sufficient time to update the display before the next line is sent. Normally, you don't need any nulls if you're displaying text on your CRT, so enter **0** (zero) at this point. If you're printing out a hardcopy of the session while you're online, you *will* need some nulls so that your printer will have a chance to print each full line before the next line is sent. You can

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KUG ROS

specify up to 99 nulls, so experiment until you can get your printer to keep up with the data being sent with the fewest nulls possible. If your display can't cope and drops characters from the beginning of each line, increase the number of nulls sent (see <A>Itering user configuration on the Utilities System menu described below).

The final step in logging on for new users is to designate a word that will be your password. Keep it short, simple, and easy to remember. KUG ROS accepts passwords from 4 to 15 characters in length.

Now you're logged on.

At this point, new users will get the "Information for New Users" bulletin detailing system information and urging them to either download or capture ROSUSR.DOC, the user's guide. This document contains detailed instructions for system use. (For those of you new to telecommunications jargon, "downloading" is getting a file from the BBS; "uploading" is sending a file to the BBS. "Capturing" is recording in memory whatever appears on your screen; later you write this information to a file on disk. Capturing is a "mode" that you use from within your telecommunications software—check your documentation [e.g., the MITE manual] for more detail.) To capture the ROSUSR.DOC, you will

have to read it online.

Another bulletin also automatically appears after you log on: "The SysOption." Here is where the sysop (system operator) states his or her 8/16 bits' worth on a variety of subjects. This food for thought is force-fed to everyone unless . . .

If you want to skip "The SysOption" or any other message or text display, you can do it by entering a ^C. Even if you find the welcome message amusing, you may decide after 137 repetitions that ^C is a "welcome" relief (sorry).

On the other hand, if you want more time to read a text display, you can pause the screen by entering ^S. Another ^S starts it up again.

The message system

After the log-on interrogation, you are automatically left in the Message System's POST area and informed of personal mail. Eight areas comprise the Message System, and the messages in each area pertain to a specific topic. The areas and topics are:

- POST (for "trading post")—you will find yourself here by default after log-in; this is where a lot of general discussion occurs;

- MAIL—where you'll find messages left for you;
- SENT—where you leave messages for others;
- KPRO-MSDOS—for owners of 16-bit Kaypros;
- KPRO-CP/M—for owners of 8-bit Kaypros;
- KUGNEWS—for members of Kaypro Users Groups;
- BBS—the phone numbers of other bulletin board systems. You can also leave any messages about difficulty in using ROS here;

- WORLD—public messages from all areas.

Within each message area, if you just want an overview of its messages and don't want to do excessive reading, enter **Q** for **<Q>** uick-scan, and you'll see a list of message numbers and subjects only. **<S>** can lists message numbers, topics, and who the messages are to and from. To **<R>**ead a specific message, enter **R** followed by the message number. (A tip: when you are prompted for a message number, just enter a carriage return. KUG ROS remembers the last message number you accessed and goes to the message with the next highest number.)

To **<D>**elete messages to or from you, enter **D**, followed by the appropriate message number. You can also **<A>**nswer the last message you've read or **<E>**nter (leave) a private, public or sysop message.

A few pointers about leaving messages: If you're a non-validated user (meaning a new user—one who

hasn't been approved yet by the sysop), you can leave messages *only* to the sysop. If you're a validated user, you can send private messages to other system users. Address the message to "ALL" or to someone in particular, list its subject, and you are ready for text entry. At this point, your cursor movement and editing commands are explicitly listed; they're similar to WordStar commands. To end text entry, enter a carriage return on an empty line.

When you've finished your message, a menu of Editor commands is shown. They include: **<C>**ontinue (append) text entry, **<E>**dit a specific line, **<L>**ist the works, **<S>**ave, or **<Q>**uit without saving. (Another tip: use **L** to display your message back to you to locate typos, and then re-list it again after editing to double-check it.) Normally, you'll type **S** to save your message on the system.

If you prefer not to leave any messages, the Message System offers other forms of entertainment. It can rerun **<I>**nformation for New Users or the ****ulletin (The SysOption) if you slept through the first showing. You can find a list of **<O>**ther KUGs, including international ones, and the phone numbers of their online systems. Or you can play the numbers game and get information about: **<1>** ROS, details on the software itself; **<2>** XMODEM and file transfers, a step-by-step

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guide; or <3> KUGNEWS, bulletins about users groups.

The utility system

This is where you can chat with the sysop, monitor system use, or adapt the system to your personal needs. And best of all, you can check the time.

If you're convinced that the sysop is a figment of RAM, then a casual <C>hat may change your mind. Only one problem here: being an elusive critter, the sysop may not be available—or willing—to talk.

At any rate, fellow users are definitely more interesting than the Grand Poobah. Find out who's who with the <U>ser list command and when the heavy action

New users seeking validation should choose the <R>eg-ister command.

is with the <S>tatistics command, which displays a bar graph of average system use per hour over a given number of days. (Get smart and beat the rush by calling at 3 a.m.!)

New users seeking validation should choose the <R>egister command. Leave your name, address, and phone number for quick registration (validation) by the sysop. Don't worry, all information will be held in strict confidence.

Experienced users should <A>lter user parameters for greater online efficiency. Typing A displays the System Configuration Menu offering these commands: ell after each prompt, <N>umber of characters per line to display, <D>efault message and file areas at log-on, <H>elp level for menus and prompts, the <L>ines per page, the number of <N>ulls after a new line, <P>assword change, <S>hift lock (ability to display lower-case letters), and <T>ransfer protocol. Manipulate these parameters to meet your needs and they will be saved for future sessions.

And last but not least, for those punctual individuals seeking only to synchronize their watches with KUG ROS, there is the <T>ime and date display.

The file transfer system

You can get to KUG ROS' <F>ile Transfer System from the Message System just by entering an F. As with the Message system, there are several different areas within the File Transfer System, but the default file area is LOGIN. These are the areas that are available to *non-validated* users:

- KUG—start-up, registration, etc.;

- ONKUG—Official Newsdisk to Kaypro Users Groups;

- PROFILES—public domain programs mentioned in this magazine.

There are additional areas available only to validated users:

- DATABASE—files related to dBASE II;
- FUN—games, graphics, and other toys;
- MISC—lots of very Kaypro-specific files that don't fit in any other category;
- NEWIN—files and programs that have recently been uploaded to the system;
- RBBS—software for running your own online system, and more;
- TELECOMM—telecommunications-oriented files from the public domain;
- UTILS—utilities such as disk editors and patchers;
- WORDPROC—handy programs for use with word processing;
- ZCPR—files related to the ZCPR and ZCPR3 enhanced operating systems.

Nearly 15 megabytes of public domain software are available for downloading.

You can <C>hange file areas by entering C, the name of the area to which you want to go, and a carriage return. A directory will automatically be displayed when you enter a new area; you can also <D>isplay a directory anytime by entering D. Directory listings contain file names for that area plus their sizes in kilobytes. You can convert these kilobyte values to transfer times at your baud rate with the <F>ilesize command: F. This command is handy for budgeting time and long-distance expenditures when downloading.

The <N>ewin command lists recently uploaded files, including a one-line description and the contributor's name. These files reside, logically enough, in the NEWIN area.

With hundreds of files online, there may be a few that you haven't heard of before. You'll probably want to see what they are. Enter a T to <T>ype ASCII or squeezed files to display their contents. (A squeezed file is one that's been "compressed" by a special utility; squeezed files have the letter "Q" in the middle of their extension—e.g., PLUTO.DQC.)

And how do you find out about COM files? If they're not described in NEWIN and don't have an accompanying DOC file, downloading and executing may be the only way to find out what they are.

Library files have an LBR extension and are used to store other files. These files have been compressed and linked together to make their transmission easier and faster. A library file is composed of groups of files; only single files can be squeezed. It's common practice to squeeze files and then place them in a library file, thus compressing them as much as possible. For example, if there are three overlay files, a document file, and a COM

file that all go together, they're often put into a single library file to make downloading easier. You open and close library files with the <L>ibrary command. All commands on the File Transfer System menu apply to members of an *opened* library file: <D>irectory, <T>ype, <S>end, etc. (Tip: to see if you want it before you download it, open a library file with L, and then use T to type the document file within that file.)

Transferring files: up- and downloading

KUG ROS uses the Xmodem protocol for file transfers. If you're not familiar with this method of exchange, read command number <2> of the Message System Menu before trying it.

Speaking as a sysop, your highest online priority should be to upload files (from you to KUG ROS) with the <R>eceive command. KUG ROS displays the amount of storage space available for uploads and asks you not to send the file if it exceeds that amount. You should be aware that the time limits don't apply while you're uploading, so there's always plenty of time to give.


You can download a file (from KUG ROS to you) using the <S>end command. KUG ROS will abort the transfer if you have insufficient time remaining on the system. If enough time is left, the total time it will take

for the transfer will be displayed, KUG ROS will wait for your telecommunications software to send a ready signal, and the fun will begin.

Goodbye

A good time to practice the <G>oodbye command is when your phone bill exceeds your net worth. This command can be exercised from any of the three system prompts. KUG ROS even asks if you would like to leave a message for the sysop on the way out.

One note about the <G>oodbye command: unless you want to log off *do not* type a "G" when the system is expecting a command. (Of course you can type G's when leaving messages, etc.) Since you don't need a carriage return to activate a command, hitting "G" by mistake will be a "terminal" error and will kick you out of the system without giving you a chance to change your mind.

Well, that's a "squeezed" version of how KUG ROS operates. For more detailed information, read Steven Fox's excellent ROSUSR.DOC. 

James Durkin was formerly the KUG manager for Kaypro Corporation and sysop of KUG ROS. He recently returned to graduate school full time as an MBA candidate.

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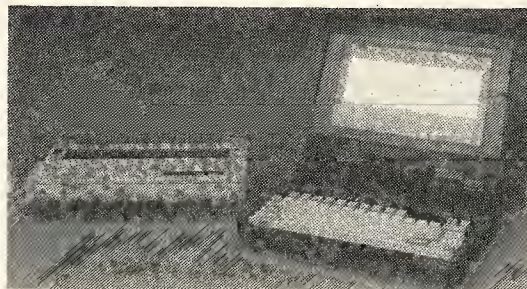
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edited by Marshall L. Moseley

If you have a tip you'd like to share with other readers, please send it to Marshall Moseley, "Tip Trader" editor, c/o PROFILES Magazine, 533 Stevens Ave., Solana Beach, CA 92075.

A clean slate

Some programs are just plain sloppy. After exiting them, your screen is still filled with data from the program. Here is a quick and easy way for CP/M users to clear their screens. At the system prompt type ^Z, then ESC, and then press RETURN. This clears the screen and places the system prompt in the upper left corner of the screen.

You can also clear the screen from within MBASIC (Turbo Pascal and dBASE II have their own commands to clear the screen). This comes in handy when you are designing a game or a menu and need to start with a blank screen. To clear the screen from MBASIC, you must send the decimal value of ^Z to the screen using the PRINT command. The decimal value of a ^Z is 26, so the command is **PRINT CHR\$(26)**.

Security for MS-DOS

If computer security is one of your concerns, there are a few tricks you can play with MS-DOS or public domain utilities that will help you safeguard your files.

MS-DOS internal commands are contained within the file COMMAND.COM. Using a disk editor like DEBUG or SuperZap, you can change the names of commands. (Always make changes on a scrap disk before you make them on your working disks.) For example, you can change the name of the COPY command to MOVE, or the ERASE command to SHRED. A prospective software thief would find an

operating system seemingly without commands.

Using a utility program called CHMOD.COM that came with your Kaypro, you can hide entire directories. If you wanted to hide the WRITE directory, for example, you would start in the directory from which it branches. On most Kaypro computers this is the MAIN directory. At the system prompt, type **CHMOD WRITE +H** and press ENTER. Now the WRITE directory is hidden from most commands. Neither D, DIR, nor TREE will show that it exists, though you can access it and use it as always.

CHMOD itself can be very useful. Here is a short batch file called HIDE.BAT that will hide any file or files you specify:

```
ECHO OFF
REM HIDE.BAT
REM THIS FILE HIDES ANY FILE
OR FILES
REM SPECIFIED BY THE VARIABLE %1
CHMOD %1 +H
```

If, for example, you wished to hide all the files with a DBF extension, you would type **HIDE *.DBF**.

Kaypro 2000 owners and those with MS-DOS 3.2 do not have CHMOD.COM. They do, however, have a program called CHATTR.EXE that will hide files but not directories.

Printing with MS-DOS

You can print a file without the aid of a word processor or program of any kind simply by using MS-DOS commands. You can also send control codes to your printer that change the print pitch, width and many other printer settings.

MS-DOS views almost everything attached to it as a *device*. Drives A and B are devices, and when you issue a copy command like **COPY A:*. * B:**, you are telling

MS-DOS to move information from one device to another—from the device named A: to the device named B:.

The printer port attached to your computer is also a device, and you can send information to it just as easily as you would to a disk drive.

To print a file using the COPY command, the file must be a standard ASCII text file, like those produced in WordStar's non-document mode. Make sure your printer is ready, then type the command **COPY A:EXAMPLE.TXT LPT1:** and press ENTER. This copies the file EXAMPLE.TXT from a device named A: to a device named LPT1:, which is your printer port. The MS-DOS PRINT command does the same thing, but it is an external command; you must have access to the file PRINT.EXE to make it work. COPY is an internal command, so you can print a file no matter what disk or directory you are logged onto.

You can also send control codes to your printer using the ECHO command and input/output redirection. For example, the control code for expanded print on an Okidata Microline 82A is a decimal 31. A quick look at the ASCII chart in the *Kaypro User's Guide* tells you that to display decimal 31 you should press ^_. (Although you are pressing the CTRL key and the hyphen, what you see on your screen will look like the up-caret and the underscore—i.e., ^_.) The command **ECHO ^_ > LPT1:** sends the expanded print code to the printer.

The Kaypro 2000 serial port

In the past, some people have had problems using the serial port on their Kaypro 2000s. Some software designed to use the serial port does

not seem to work, and checking the status of the port with KSTATUS (a program that is a part of your bundled software), indicates that the port is operating.

The port may have been *deselected*—meaning that it is simply inactive. To select the serial port (make it active), use KSTATUS. First run KSTATUS, then call up the KSTATUS menu by pressing **CTRL, ALT, and S**. Move the highlighted bar to the PORT section of the menu. Even though the option under PORT may say RS-232, the port itself may not be active. Press **RETURN** a few times. This toggles the communications output between the serial port and the internal modem, and if the serial port is deselected, it activates it. Leave the RS-232 port selected, then exit the program by pressing **ESC**.

Find the underline

Recently I read in *PC Magazine* about a patch to cure WordStar of its inability to find and replace the underlining toggle (^PS), which is an annoying limitation imposed by the reservation of that string to mean the wildcard search for a Symbol (see "varying characters in Find Strings" in the WordStar manual).

Naturally, it was a patch for the MS-DOS version 3.31 of WordStar, which I have at work. However, I use CP/M version 3.3 at home. So I went sleuthing and was successful in figuring out how to patch my copy at home.

You patch WSOVLY1.OVR to achieve this result. Since you want to free up the ^PS string so that it can be itself in the text, you must give WordStar a new value for its symbol wildcard. I chose ^PL because it is still mnemonic (symbol), and this string has no other meaning in the program and hence does not conflict with anything else—^PY, ^PB, etc.

Here are both patches. I have done both and they work. In the

following examples, what the screen displays is in regular type. You type what appears in boldface.

For CP/M:

```
DDT WSOVLY1.OVR
-S20DD 13 0C
-20DE CA .
^C
A0>SAVE 131 WSOVLY1.OVR
```

For MS-DOS:

```
DEBUG WSOVLY1.OVR
-E 20D5
5533:20D5 13.0C
W
Writing A100 bytes
Q
```

Bernadette Freedman
Philadelphia, Pennsylvania

Always carry a spare

I have now been using my Kaypro 4'84 for some 12 months and I have

enjoyed (almost) every minute of it. Most of my time has been spent in the realm of WordStar. Like all neophyte word processor operators, I have had my problems and my moments. One of my more pressing problems gave rise to one of my moments.

You've no doubt had the dreaded "DISK FULL" message, or the slightly less problematical "DIRECTORY FULL," and been left with an edited version of some article "hanging." This will *not* happen to me again because now I make suitable arrangements to cope with such emergencies.

I now add two files to my disk that I fall back on when I run out of disk space. The first file that goes onto the disk results from creating a 10K empty file. Just type in the command **SAVE 40 D:---SPARE---**, where "D" is the drive designation



"Twee, woo woo, bleee-blep, t-woop-whoop, weee—"

and "---SPARE---" is the name of the file. This locks away 10K of space for emergencies like the "DISK FULL" message. You can stash away more or less than 10K according to your needs. (*Editors' note: For a slightly different solution to this problem, see "A Real Cliffhanger" in the September 1986 issue of PROFILES.*)

Since you have used three hyphens as the first characters of the file name, it will appear first in the alphabetical listing of files when you use D.COM. If you are using WordStar, you can always erase the 10K empty file with a ^KJ, giving you extra space or another directory entry, whichever is more urgently needed.

Since I catalog my disks, the command that creates the second new file is **SAVE 0 D:---DISK---.nnn**, where *nnn* is the disk catalog number. This puts an entry in my directory that contains the catalog number, and since I saved zero bytes, it uses no storage space on the disk. It only creates a directory entry.

L.A.F. Stockley
Papakura, New Zealand

A WordStar keypad chart

As a one-time Kaypro dealer I have had the opportunity to teach WordStar to new users, and the most helpful thing for the inexperienced user is to configure the keypad with CONFIG. I created a little file in WordStar to illustrate the key configurations. I would print this chart and tape it to the WordStar working copy envelope. I would instruct the user to always place that envelope on the keyboard above the keypad for reference. I found that with this learning aid I could bring a novice to the intermediate level in about an hour. See figure below.

Believe me, if you try to teach a beginner ^KB^KK^KV^KH to move a block, you're going to inflict brain damage. But it is easy to teach "mark beginning, mark end, move" as a quick, three-key process. These "command keys" will drastically reduce the start-up time for the new user and will instill the confidence to attack those software manuals. I wish someone had shown me this when I learned WordStar.

David Sutherland
Everett, Washington

>>>WORDSTAR<<<

MARK BEGIN BLOCK (^KB)	PAGE UP (^R)	TOP OF FILE & SAVE (^KS)	UNDER- LINE
HOME (^QS)	QUIT FILE NO SAVE (^KQ)	END OF LINE (^QD)	TURN OFF MENU (^JH0)
MARK END OF BLOCK (^KK)	PAGE DOWN (^C)	BOTTOM OF FILE (^QC)	SAVE & DONE (^KD)
REFORM (^QQ^B)		MOVE & HIDE MARKERS (^KV^KH)	

Perfect Writer

I want to thank Michael Schwager for a truly useful, amusing and accurate answer to the "cliffhanger" problem ("A Real Cliffhanger," September 1986). I wish this kind of information had been available on my first plunges over the cliff.

Pertaining to Perfect Writer, an easier way to check disk file space than ^X = is ^X^B, the Buffer Directory command. No matter where you are in the file it will give your exact number of bytes and show what you've left open or unsaved. This is very useful when you get the message "Swap File Full."

Craig Little
Philadelphia, Pennsylvania

WordStar and subdirectories

In the September 1986 *PROFILES* Ted Silveira described a public domain program called DPATH30, which allows WordStar users to access any directory on the disk. Those of you who do not have DPATH, do not despair. MS-DOS 3.2 has a command that will allow you to do the same thing.

The command is SUBST (for *substitute*), and it creates a virtual drive that corresponds to a path name that you designate. A virtual drive is one that exists logically but not physically—a RAM disk is a virtual drive.

As an example, assume that you want to use WordStar to edit files in your telecommunications directory. Go to the directory where your MS-DOS utility files are and type:

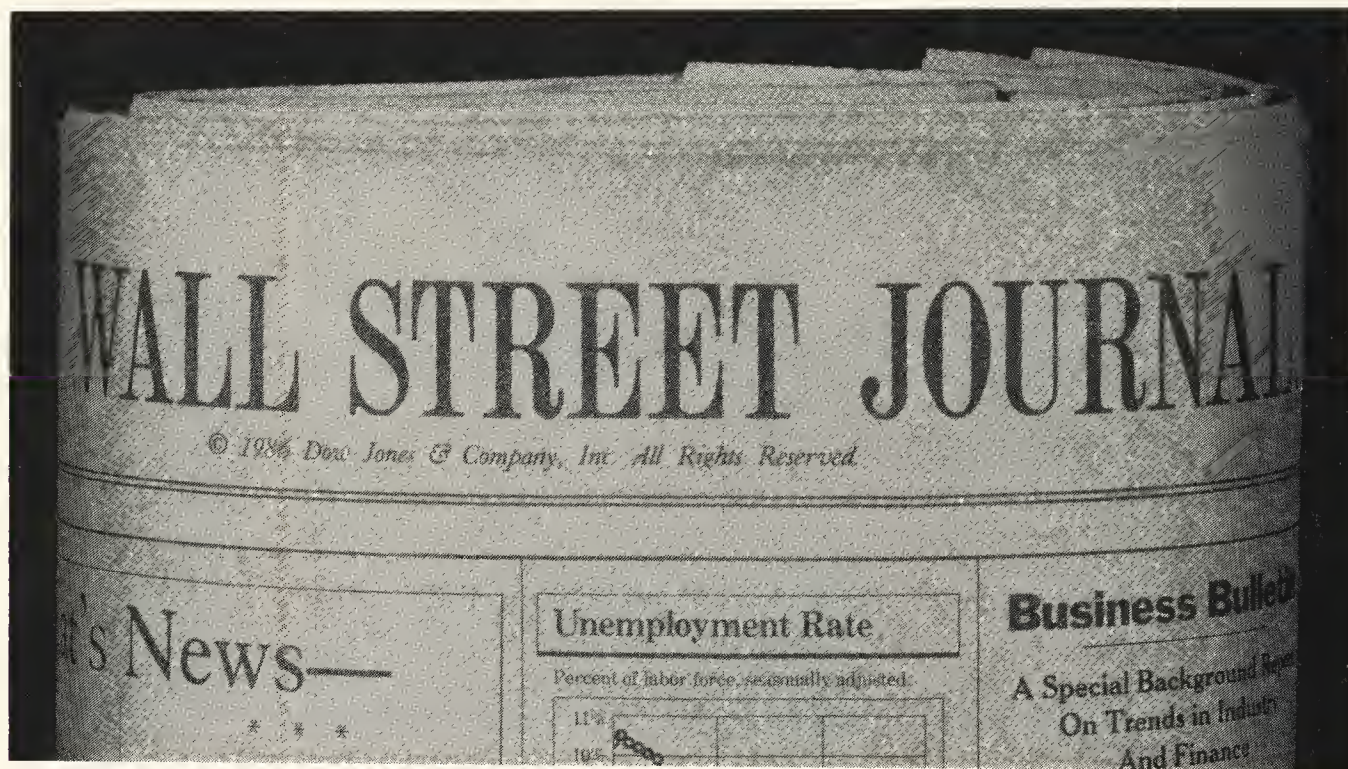
SUBST E: C:\MAIN\COMM

This creates an E drive that is actually the COMM directory. Now use WordStar to log onto the E drive. You can create, edit, and save files just as if you were actually logged onto another disk.

For this to work you must use the version of WordStar shipped with MS-DOS 3.2. Versions shipped with MS-DOS 2.1 will not work. ■

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Beginner's Luck

Getting practical with Perfect Calc

by James Spencer

If you received the Perfect software series when you bought your Kaypro, you probably got right down to work to master the word processing program, Perfect Writer. But unless you had a specific need for Perfect Calc, you may have overlooked this powerful piece of software.

If you have never explored the possibilities of Perfect Calc, this article will provide a couple of easy, useful applications to introduce you to the program, and if you know Perfect Writer's commands, then you already know Perfect Calc's, because they're virtually identical.

I'll be giving you step-by-step instructions for creating two simple spreadsheets; for a more complete introduction to Perfect Calc's structure and operation, read the brief "Overview" and "Getting Acquainted" sections in your manual. And for a general introduction to spreadsheets, you may wish to read the August 1986 "Beginner's Luck" column. With this preparation, you should find it easy to begin using Perfect Calc for applications like those detailed below, and you may then be inspired to take advantage of Calc's more advanced capabilities.

Birthday spreadsheet

Perfect Calc makes it easy to keep track of important birthdays and anniversaries—not just the dates, but how old the person is, or what anniversary it is.

To make this spreadsheet, place a working copy of Perfect Calc into drive A and a formatted disk in drive B. It does not necessarily have to be a blank disk.

At the A> prompt, create a spreadsheet file on the disk in drive

B by typing **PC B:BIRTHDAY.PC** and pressing **RETURN**. You will be presented with a blank spreadsheet consisting of 255 rows and 52 columns. The rows are numbered 1 through 255 down the left side of the screen, and across the top of the screen the columns are labeled with the letters of the alphabet—the lowercase letters a through z and uppercase A through Z for a total of 52 columns. (The default width of a column is nine spaces, but this can be changed to a maximum of 76.)

Your screen provides a "window" in which you can view only a

Cells are boxes formed by the intersection of columns and rows—in this case, the cell is located at the intersection of column a and row 1, and its "coordinates" are a1 (coordinates always begin with the letter of the column, followed by the row number).

With the cursor at cell a1, type the label **NAME**. When you type a label (or number, or formula), it will first appear on the prompt line at the bottom of the screen; then, when you press **RETURN**, it will be entered where the cursor is located. Next place the cursor at c1 by using the right arrow and type **PAGE**. In

Figure 1: Sample Birthday Spreadsheet

	a	b	c	d	e	f	g	h
1	NAME		AGE		86	YEAR		BIRTHDAY
2	Kennedy, Nina		64			22		dob 01/07/22
3	Spencer, Terry		44			42		dob 01/25/42
4	Spencer, Eleanor		67			19		dob 03/01/19
5	Spencer, Adam		5			81		dob 03/24/81
6	Spencer, David		26			60		dob 03/31/60
7	Spencer, Danny		3			83		dob 08/25/83
8	Spencer, Joseph		23			63		dob 09/04/63
9	Henson, Nina		25			61		dob 09/29/61
10	Spencer, Sheila		24			62		dob 10/07/62
11	Spencer, James C.		72			14		dob 10/25/14
12	Spencer, Russetta		44			42		dob 12/17/42

portion of the spreadsheet—you can see only the letters a through h without moving the "window" with the right arrow. You will also see only rows 1 through 22 down the left side, but if you keep moving the screens up, you will, as we've mentioned, find that the numbered rows go to 255.

To start, you should label the tops of the columns. When you begin, the cursor (indicated by < >) will be located at "cell" a1.

d1 type the last two numbers of the current year—86; at e1 type **YEAR**; and finally in g1 type **BIRTHDAY**. Figure 1, above, shows you what the spreadsheet will look like when you're done.

Move the cursor to the next row using the arrow keys and enter each person's name and birthday in the appropriate columns. To place birthdates and anniversaries in column g, it will be necessary to begin with either a space or a letter,

because this tells Perfect Calc that the entry is a label and is not meant to be used in calculations. I found it convenient to put my entries in the format "dob 01/25/42" so they would all line up, but you could just as well type the date as "January 25, 1942."

In column e enter only the last two numbers of the year of birth for each person. When you type in numbers, Perfect Calc will automatically print them as a dollar amount—that is, the number will be followed by a period and two zeros. To remove the period and zeros—in other words, to change

tells Perfect Calc to subtract the number at e2 (22 in the example) from the current year (86) located in d1.

Replicating formulas

To "replicate" a formula is to repeat it in a series of cells in a row or a column. The process involves designating the start of the formula to be replicated, moving the cursor

along the row or column where the formula will be duplicated, and designating where the replication ends. We will replicate the formula d1-e2 so that it will automatically be entered into each cell in column c without being retyped each time.

To do this, type ^W, press ESC, and then press the space bar to mark the beginning of the place where you want the formula to

Replicating formulas so that they will be automatically entered can save a lot time.

the display format—type ^X^D. In answer to the query "Global, line or column," reply g for global, which changes the format throughout the entire spreadsheet. At "Global:," type 0 for zero decimal places.

After putting down all the information, you will notice that the labels at the tops of the columns aren't lined up with the information beneath them. Move the column labels to the right by placing the cursor on the word you want to realign and using the space bar to insert the necessary number of spaces to line it up. Note that if you have labels entered to the right of the label you are editing, the text you enter can't extend beyond the width of the present column—the label to the right is an obstacle.

For the formulas, move the cursor to cell c2 and press the = (equals sign) key. At the bottom left of your screen you will see "FORMULA: c2=." In lowercase letters (uppercase will not work) type the formula d1-e2, but do not press the RETURN key yet. This formula

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

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appear (cell c2). Wait until you see the message "Mark Set at c2," then move the cursor down column c to your last entry—or even further, if you want to allow some extra lines for more entries. If you are moving many cells down the column, it makes more sense to use the GOTO command, which quickly moves the cursor to a specified position. To use this command, type the "greater-than" symbol (>). Perfect Calc will respond with "GO TO:" and you can simply type the coordinates of the position you want the cursor to go to.

When you give the command **ESC Y**, Perfect Calc displays the formula for row 23 on the prompt line at the bottom of the screen: "Formula: c2=>d1<-e2," followed by the question "Relative?" What Perfect Calc wants to know is whether a particular element ("variable") of the formula should be constant from cell to cell, or if it should change to reflect its posi-

question now concerns only e2—"Formula: c2=d1->e2< Relative?" This time answer Y for yes. This will cause each successive cell (e3 through the last cell you have marked) to be subtracted from the constant number in d1. After you have answered "Y" or "N" for each variable in the formula, the computer will automatically enter the formula in each cell of column c within the area you have defined.

After you have finished, create a text file containing your spreadsheet by typing the print-to-file command, which is ^X^P. When Perfect Calc asks you for a file name, type **B:BIRTHDAY.TXT**. Exit Perfect Calc with ^X^C. When the program asks you "Ignore changes this session?", reply N. This saves your spreadsheet. Transfer BIRTHDAY.TXT to Perfect Writer and print the file.

If you have entered birthdays and anniversaries in the order in which they occur, January through

homeowner doesn't wonder if it would be worthwhile to seek a lower mortgage rate? Of course there is a catch to these lower rates—most banks require another closing process with all the accompanying expenses, or for the homeowner to pay extra "points," or sometimes both.

If your mortgage allows any extra payment to be applied to the principal on the loan, you can easily see how much interest you can save by paying an extra five or ten dollars each time.

Another decision to consider on a home mortgage is the relatively recent option of biweekly payments. Some banks now allow homeowners to divide their payments and pay half every two weeks rather than monthly. How does this affect the time needed to pay off your home, and can you save interest?

This mortgage amortization spreadsheet can quickly and easily

Figure 2: Sample Mortgage Spreadsheet

	a	b	c	d	e	f	g	h
	PAYMENT	BEG. BAL	%	ANNUAL INT.	INTEREST	PRINC.	TOTAL	
1	576.09	48000.00	0.120	5760.00	480.00	96.09	480.00	
2		47903.91		5748.47	479.04	97.05	959.04	
3		47806.86		5736.82	478.07	98.02	1437.11	
4		47708.84		5725.06	477.09	99.00	1914.20	
5		47609.84		5713.18	476.10	99.99	2390.29	
6		47509.84		5701.18	475.10	100.99	2865.39	
7		47408.85		5689.06	474.09	102.00	3339.48	
8		47306.85		5676.82	473.07	103.02	3812.55	
9		47203.83		5664.46	472.04	104.05	4284.59	
10		47099.78		5651.97	471.00	105.09	4755.59	
11		46994.69		5639.36	469.95	106.14	5225.53	
12		46888.54		5626.63	468.89	107.20	5694.42	
13		46781.34		5613.76	467.81	108.28	6162.23	
14		46673.06		5600.77	466.73	109.36	6628.96	
15		46563.70		5587.64	465.64	110.45	7094.60	
16		46453.25		5574.39	464.53	111.56	7559.13	

tion in the spreadsheet (the formulas in Figure 3 on page 63 should make this idea more clear). The markers on each side of d1 in the formula above indicate that this question applies only to d1. Reply N for no, because we want d1 to remain the same in every cell—that's the year we are subtracting all the birthdates from.

The markers then move to both sides of e2, showing that this same

December, you can tell at a glance when the next birthday or anniversary is coming up. I keep my printed list on the bulletin board in the kitchen and cross off the dates as they pass.

Mortgage amortization spreadsheet

Here is another spreadsheet that can help you in times of fluctuating interest rates. In these times what

give you the figures to help you make decisions in the above situations.

Begin this program the same way you began the birthday spreadsheet. You can even use the same disk in drive B, as only 2 to 3K is used by the birthday spreadsheet. Name this spreadsheet **PC B:MORTGAGE.PC**.

Across row 1 fill in the labels as illustrated in Figure 2, above.

Figure 3: Sample Mortgage Spreadsheet Formulas

	a	b	c	d	e	f	g	h
1	PAYMENT	BEG.BAL	%	ANNUAL INT.	INTEREST	PRINC.	TOTAL	
2	576.09	48000.00	0.120	b2*c2	d2/12	a2-f2	f2	
3		b2-g2		b3*c2	d3/12	a2-f3	f3+h2	
4		b3-g3		b4*c2	d4/12	a2-f4	f4+h3	
5		b4-g4		b5*c2	d5/12	a2-f5	f5+h4	
6		b5-g5		b6*c2	d6/12	a2-f6	f6+h5	
7		b6-g6		b7*c2	d7/12	a2-f7	f7+h6	
8		b7-g7		b8*c2	d8/12	a2-f8	f8+h7	
9		b8-g8		b9*c2	d9/12	a2-f9	f9+h8	
10		b9-g9		b10*c2	d10/12	a2-f10	f10+h9	
11		b10-g10		b11*c2	d11/12	a2-f11	f11+h10	

If your mortgage payments are monthly, it will be handy to project your figures for ten years at a time. To do this, replicate all the following formulas through row 121. If you make biweekly payments, remember that during the course of the year you will be making two extra payments. In this case you will not quite be able to project the full ten years, because there won't be enough rows.

In a2 type the amount of your mortgage payment and in b2 the balance owed. Put the annual interest rate on the loan in c2. (It's a good idea to increase the number of decimal places in column c from two—the default—to three. To do this, use the ^XAD command as above, but this time choose the column option. This will allow for entry of one-half percentage rates, such as 10-1/2 percent, which would be put in as .105.)

The formulas

Type = at b3 and enter the formula b2-g2. Replicate this through row 121, using the method outlined earlier and answering Y to both parts of the formula to make them relative. These formulas subtract the principal portion of the last payment from the old balance to furnish the new balance. (All of the formulas we're using are shown in Figure 3, above.)

At d2 enter the formula b2*c2 and replicate it in column d down through row 121. Make the b2 relative and leave c2 the same throughout (answer Y for b2 and N for c2). This multiplies the mortgage bal-



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ance by the percentage rate to show the annual interest.

You can see how much time the computer takes to calculate each time you add another figure or column of formulas. To stop this you can change modes. Type **^XM**, then reply **M** (for manual) to the query "recalculation Mode:." After this the spreadsheet will recalculate only when you strike the exclamation point key.

For **f2** type the formula **d2/12** if your payments are monthly and **d2/26** if your payments are bi-weekly. Replicate it in column **f**, to row 121, making the **d2** relative. You will not be queried about the second number because whether it's 12 or 26, it's already a constant. This formula divides the annual interest in column **d** by the number of annual payments to indicate how much of each payment goes for interest.

In **g2** enter the formula **a2-f2**. Replicate this formula in column **g**, again through row 121. Make **a2** constant and **f2** relative. These formulas subtract the interest paid from the total payment to show how much was applied toward the principal.

In **h2** enter **f2**, which merely moves the amount from **f2** to that cell. Then, in **h3**, type **f3+h2**. When you replicate this formula (column **h**, through row 121), answer **Y** to both sides of the formula, making them both relative. This will keep adding the interest in column **f** to provide a cumulative total of interest paid.

In all spreadsheet programs, once you have your formulas set up and before entering any data, save this "template" with **^XAS**. Use this as a master copy. With the **^XAW** command you can make an exact duplicate of your template, but

with a different name. You can make as many copies of a spreadsheet as you like, but each one must have a different name. If you make a mistake or have an accident with the duplicate, you can always make another copy from your master, without having to set it all up again.

Of course, these simple applications merely scratch the surface of the great potential of Perfect Calc, and they are aimed at users who have hesitated to try out spreadsheets. However, the more you use one, the more jobs you will find for it to do.

James Spencer is a retired New York State Police sergeant and freelance writer. He is treasurer of the local Babe Ruth baseball league, where Perfect Calc has been utilized for figuring batting averages and for accounting.

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Three kinds of memory

by Tom Enright

Memory (the silicon kind, not the type that you lose as you grow older) is our subject for this month. You may know that PCs, the Kaypro PC included, can directly use 640K of RAM. (They actually handle a full megabyte, 1,024K—more on that a little later.) To those of us who moved up to DOS from 64K CP/M machines, 640K seemed like more RAM than anyone could ever use. But RAM is like closet space. Your available storage (RAM or closets) is always less than the space required by the items you want to store.

The proliferation of RAM-resident utilities and other memory-hungry programs has caused many of us to bump into the 640K limit. Each "fantastic" new resident-utility program eats up a significant block of available memory. And with more memory available, more programs are being written that require large amounts of it. Sooner or later some combination of regular programs and resident utilities that you're running will require more RAM than is in your computer.

In the DOS environment RAM currently falls into three basic classifications: expansion memory, extended memory, and expanded memory. The similarity of names among the three classes leads to a lot of confusion. The purpose of "Technical Forum" this month is to attempt to shed some light on this confusing situation.

Expansion RAM

When you add regular memory to your PC, you are adding expansion RAM. Many DOS computers come with less than the maximum amount of memory. It is up to the

user to add more memory in the form of chips or complete memory boards.

The 8088 CPU in an IBM PC or compatible can directly access up to one megabyte of memory. The 640K limit that DOS imposes is program memory; the other 384K (one meg minus 640K) is memory reserved for use by DOS system resources. Having 384K reserved for system resources allows for a very flexible operating system.

The 384K systems area, at the high end of the 8088's address range, is divided into specific areas. The code for each supported DOS operation begins at a specific address. For example, the 192K block of memory from A0000h to BFFFFh is reserved for the video (screen) output. Which parts of that reserved area are used, and how they are used, depends on which video card you have.

Other blocks of memory are reserved for ROM code (BIOS, BASIC, and HARD DISK), I/O operations, or status information about your system. The status information lets software determine what type of video card you have, how many serial and parallel ports are available, and how many disk drives are installed. The basic design also leaves several blocks of memory open for future expansion or user-supplied I/O routines.

The memory for each I/O module is on the individual expansion card. Video cards, disk controller cards, and serial cards all come with the memory they use already mounted on them. None of their memory comes out of your RAM (640K of program memory).

The original IBM PC came with only 64K of RAM. The main board was socketed to take an additional 192K, for a 256K total. To reach the 640K maximum, additional memory boards had to be installed. Most IBM multi-function boards have 384K of RAM for that reason. They were designed to take the original IBM PC to its limit of 640K.

The Kaypro PC, a newer design than the IBM PC, uses 256K memory chips instead of the older 64K chips and is socketed for 768K of RAM. The reason for 768K is that, for an IBM PC compatible, RAM chips are used in sets of nine. Nine 256K (kilobit, not kilobyte) chips make 256K (kilobytes) of memory. Eight chips are for working memory and the ninth one is for parity checking, a simple form of error detection. Three banks (sets) of 256K result in 768K of memory.

DOS allows 640K of program memory, but the Kaypro PC is socketed for 768K. That's 128K more than DOS supposedly allows. DOS cannot use that extra 128K as normal RAM. But, by using the RAM-DISK.BIN device driver (in MS-DOS 3.2, it's called VDISK.SYS) in your CONFIG.SYS file, DOS thinks that the extra memory is a disk drive.

Since the Kaypro PC already provides for 768K of memory, the RAM on multi-function cards cannot be used as normal system memory. But these cards also come with their own RAM disk drivers to use their onboard memory as a RAM disk. Other cards available have from 512K to two megabytes of memory for use as a RAM disk. In each of these cases the RAM used as a RAM disk is expansion memory, not extended or expanded memory.

Extended memory

Extended memory adds up to 15 megabytes to the IBM AT class machines, including Kaypro's 286i. It is restricted to AT class machines because it uses instructions found only in the Intel 80286 CPU. The only DOS software that can use this memory is VDISK, the RAM disk driver distributed with DOS 3.0 or newer. No versions of DOS can currently use extended memory.

The only operating system I know of that can use extended memory is XENIX, from Microsoft. XENIX is Microsoft's version of

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TECHNICAL FORUM

UNIX, a multi-user mini- and mainframe operating system. The task of installing and maintaining XENIX is best left to professional programmers. Using XENIX, or any other multi-user operating system, requires hard study and extensive training. It is not suited to the personal computer environment.

Some future version of DOS will probably support extended memory on AT class computers. The current versions of DOS are simply not up to the task of managing 15 megabytes of RAM. It is logical that the required memory management support will be added sometime—but don't hold your breath.

Expanded memory

Expanded memory is a method for adding up to eight megabytes of memory to PC, XT, and AT class machines. The Expanded Memory Standard (EMS) was designed by Lotus, Intel, and Microsoft as a combination of specially designed memory boards and a standardized software interface. Once you have installed expanded memory and the software interface (the Expanded Memory Manager or EMM), programs that support expanded memory can access up to eight megabytes.

The entire expanded memory concept depends upon holes existing in the upper 384K of memory that is reserved for DOS. In the section on expansion memory you learned that memory space had been left open "for future expansion or user-supplied I/O routines." The EMM, which installs as a device driver in your CONFIG.SYS file, looks for a 64K block of memory in upper memory that isn't used. When the EMM finds a contiguous 64K block of free memory, it uses that RAM as a "window" into the eight megabytes of expanded memory.

This 64K window is divided up into four 16K blocks. Different portions of expanded memory are "bank switched" in and out of the

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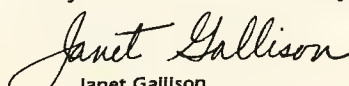
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Janet Gallison
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16K windows as needed. Allocation of expanded memory is controlled by the EMM. When a program requests expanded memory access, the EMM assigns one or more 16K windows to that program. From that point on all expanded memory access must be cleared by the EMM before the program can read or write to RAM.

If a program requests an address within a currently active 16K page, the memory access is allowed. Otherwise the program must wait while the EMM switches in the correct 16K block of memory. When expanded memory accesses are to sequential addresses, as in a sorting operation, the program will run with no noticeable slowdown. But if memory accesses are to widely separated addresses, as in a spreadsheet recalculation, the EMM must do a lot of bank switching and the program will suffer noticeable speed degradation.

Even the creators of the EMS admit that it is a "kludge." It depends on a hole in upper memory to use as a window into expanded memory. IBM could slam that window down on everyone's fingers at any time. All they have to do is allocate sections of upper memory to some features that do not leave 64K open. If IBM used that section of upper memory to support hardware memory management routines for extended memory, the Expanded Memory Standard would be dead.

Winding down

So, what have we figured out about memory? Normal memory, even on a RAM disk, is expansion memory. The 15 megabytes of memory on AT class machines that almost nothing can use is extended memory. Expanded memory lets you use some DOS programs with up to eight megabytes of extra memory—unless IBM decides to chop EMS off at the knees by allocating the same block of memory to hardware support for extended memory. Aren't computers wonderful? 

COMING NEXT MONTH

Here's a preview of the articles planned for the February issue of *PROFILES*.

- **Electronic mail:** What is it? Has it fulfilled its promise? Can you use it, and if so, which service should you choose.

- **The basics of the BASICs:** Our programming series continues with a look at the languages that are bundled with Kaypro computers—MBASIC for CP/M owners, and GW-BASIC for MS-DOS owners. This two-part article will examine the characteristics of BASIC, offer general hints on BASIC program-

ming, and provide some practical examples.

- **In the CP/M version of the magazine,** look for step-by-step instructions for installing a fan and for a practical discussion of how to perform bit-by-bit operations.

- **In the DOS version,** look for part 2 of an MS-DOS tutorial for intermediate users and for reviews of the DOS office software Javelin and Harmony.

- **1986 index:** If you refer to articles in past issues of *PROFILES*, you'll find this handy subject index invaluable.



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Softstrip and "Load on a Disk"

by Tom Enright

Only two products are featured this month so that I may cover them in more depth. The first item is the Cauzin Softstrip System (DOS), which can read and write machine-readable data on plain paper. The second item, also for DOS, is a software program called "Load on a Disk," which brings the speed and power of computers to those firearm owners who make their own ammunition (handloaders).

Softstrip

The Cauzin Softstrip System consists of an optical scanner housed in a 3 x 2-1/2 x 16-inch casing, plus the software to run it. The scanner functions as a reader for the data strips. An additional \$19.95 buys a program that will *write* the data strips. These coded strips can contain any kind of data or program that you'd normally put into a disk file.

The scanner has its own internal infrared light and optical scanning eye that reads each data strip through the open bottom of the reader. The reader connects to the computer through either the COM1 or COM2 serial port. Power for the scanner comes from an external power adapter that plugs into a standard wall outlet.

The encoded data strips are analogous to highly compressed bar code. Each eight-inch strip holds from 844 to 1,065 bytes of data. The file's name and the number of strips in that file are also coded into the strip. The strips are numbered in the order you must read them, and each has two index marks for alignment with the reader.

To read a data strip, you simply place the reader over it, making

sure the index marks are aligned. Then run the CAUZCOMM program and select "R" for "read a data strip." Data from each strip is read directly into a disk file and you are returned to the main menu when the operation is complete.

The optional program to print your own data strips requires an Epson FX, RX, or compatible dot-

reader before they can take advantage of the convenience.

Data strips do have some use as a backup medium for critical files. But as I've noted, the disadvantages are that the data strips are slow to print and the scanner is sensitive to the condition of your printer ribbon. With seven data strips on a page, backing up large files is very

*The encoded data strips
are analogous to highly
compressed bar code.*

matrix printer. Since the data strips are printed in graphics mode, making your own strips is *not* a rapid operation. An Okidata 193 (rated at 160 cps) took nine minutes and two seconds to encode and print the six strips needed for a 4,864-byte test file.

Creating your own data strips requires some experimentation before everything will work correctly. A worn ribbon will not produce a strip that the scanner can read. Neither will a new ribbon, because the ink tends to "wick" on the paper and the dots run together. Best results are obtained with a ribbon that has had some use, but still prints a dark image. Since the Cauzin system uses your printer's graphics mode, your printer ribbons will wear out quickly. You may also have to adjust the print head gap before you can produce a data strip that the scanner can read reliably.

The Cauzin system is not a "cure-all" for the problems of software distribution or transport. It is cheaper for publishers to distribute their software in this form, but it's not cheaper for end-users to use it. They must spend \$199 for the

time consuming. I did not time it, but I would estimate that backing up a 24K file would take about half an hour.

Perhaps the best use for the Softstrip System is one already discovered by some book publishers. Some computer books are including program source code in data strip form. If you have the Cauzin System, you can read the source code directly from the book. Otherwise you must order a disk containing the source code from the book's publisher.

Load on a Disk

This DOS, Apple, or Commodore program appeals to a small group of users—handloaders. Handloaders seek to avoid the high cost of factory ammunition or to produce a load that performs more accurately in his or her firearm. "Load on a Disk" brings the speed and accuracy of computers to two areas of interest to handloaders—internal and external ballistics.

Internal ballistics concerns the time period from ignition of the powder charge until the bullet exits the muzzle. External ballistics charts the bullet's path from the

muzzle to its point of impact. Hand-loaders are mainly interested in the peak pressure and muzzle velocity components of internal ballistics and the portion of external ballistics that relates bullet path to point-of-aim at various ranges. "Load on a Disk" provides fast and accurate answers in both of these areas.

The load development section of this program is a computerized version of the "Powley Computer," which was popular among technical reloaders in the past. The Powley Computer is a slide-rule type of device used to compute a safe starting load when cartridge volume, bullet weight, seating depth, and powder (propellant) type are known. This device was more popular before bullet and powder manufacturers began publishing comprehensive loading tables for popular cartridges.

The trouble with published loading tables is that they cover only modern cartridges. Loading data for older cartridges in modern guns and new, often experimental, cartridges is difficult to find. "Load on a Disk" will, after you enter the required data, recommend a conservative starting load and a "most efficient" load for firearms capable of operating at pressures of from 40,000 to 50,000 pounds per square inch.

The required data for load development is bullet diameter, cartridge description, bullet length, seating depth, case capacity in grains of water, and barrel length. (A grain is a unit of weight—there are 7,000 grains in a pound and 437.5 grains in an ounce.) In addition to recommended loads, you receive an estimate of the muzzle velocity for the barrel length you have specified.

Of even greater use than the load recommendations are the down-

range ballistics calculations. Here you enter the desired muzzle velocity, bullet weight, ballistic coefficient, range for sight-zero, minimum and maximum ranges to cover, and at what range increments you want the bullet path calculated. The program then prints a table relating bullet path above or below your point-of-aim. It is a simple matter to run a set of tables for the same load at various sight settings and select the one that gives the least deviation from point-of-aim for your load.

The user's manual and screen formatting are not up to the "whiz-bang" standards set by today's software. Neither the program nor its manual does any hand-holding. This program is meant for experienced reloaders who are interested in accurate calculations, not pretty screens. The ballistics calculations are accurate and the recommended loads are conservative. All things considered, this program is an excellent tool for the serious reloader or marksman.

Quick Reference Summary

Product: Softstrip System (DOS or Apple)

Manufacturer: Cauzin Systems, Inc.

835 S. Main St.

Waterbury, CT 06706

Phone: (203) 573-0150

Sugg. Price: Reader—\$199, data strip writing software—\$19.95

Product: Load on a Disk (DOS, Apple, Commodore)

Manufacturer: W.W. Blackwell

9826 Sagedale

Houston, TX 77089

Phone: (713) 484-0935

Sugg. Price: \$49.95, plus \$2 shipping and handling.

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New Products

The following new product listings are not reviews and should not be considered endorsements. To be considered for publication in this column, press releases should be sent to Suzanne Kesling, "New Products" Editor, c/o PROFILES Magazine, 533 Stevens Avenue, Solana Beach, CA 92075. Releases must state prices and on which Kaypro models products run. Include black and white photos if available.

edited by Suzanne Kesling

Video image index

The Telesis Video Image File is a computerized video storage and retrieval device. When interfaced with a computer via an RS-232 port, a video monitor, and a video camera, the Video Image File provides freeze-image recording and indexed storage of as many as 2,460 individual images.



Less than one-fifth of a second is required for random access recall and display of images. Storage and display modes can be accessed by a keyboard command.

The Video Image File produces an image resolution of approximately 300 x 256 pixels with a full grayscale range.

\$2,995. Kaypro DOS machines. Telesis Distributing, Inc., P.O. Box 21461, Reno, NV 89515; (408) 739-9172.

Disk copier

The Recortec FDC-502 can make a backup copy of any IBM PC disk in 55 seconds. It is capable of copying

single- or double-sided, double-density software regardless of format.

The Recortec floppy disk copier consists of two double-sided, double density disk drives and a ROM-based processor that executes all disk copying functions. The user places the original disk in the Master drive and a blank disk in a Copy drive and presses the Start button.

\$995. Recortec Inc., 275 Santa Ana Ct., Sunnyvale, CA 94086; (408) 737-8441.

Management program

ASSET/PACK is a management program for use by in-house corporate financial managers, small businessmen, tax practitioners, and accountants.

The system can manage up to 50,000 assets per company. Assets may be divided into up to 36 departments, divisions, or locations. Each asset record contains 20 pieces of information, including date purchased, date placed in service, depreciation type, class life, and current and prior depreciation.

ASSET/PACK supplies most depreciation tables from 1969 to the present, and updates will be available as tax laws change. The system also allows manual entry and update of specialized depreciation tables.

\$395. Demo disk for \$25. Kaypro MS-DOS and CP/M computers. Alpine Data Inc., 635 Main St., Montrose, CO 81401; (800) 525-1040.

Checkbooks

Check-It-Out is a checkbook system that allows the user to keep track of, and write checks for, one to nine checkbooks. It also prints financial report data.

The package produces both regular and payroll checks and allows the user to input deposits and adjustments. Entries can be pre- or post-dated, with subsequent balances recomputed.

Also included is a find/change feature that lets a manager find any

non-cancelled item, change it, and again have all subsequent balances recomputed.

The system will also print 14 types of reports to either paper or the computer screen.

The program has password protection and prints on NEBS #9024 checks.



\$69.95. Kaypro DOS computers. Computer Programming Associates, 8041 Sierra St., Suite 100, Fair Oaks, CA 95628; (916) 962-9296.

Screen slides

SlideMaker enables users of popular PC graphics software to obtain 35mm presentation slides of their charts and graphs.

Users first create a chart or graph using their favorite DOS graphics package, then load SlideMaker and use it to choose and optionally preview the selected pictures.

The files are then sent via modem to the Graphx Production Center in Massachusetts, where they're converted into high-resolution color slides within 24 hours. Transparency and paper output is also available. Users without modems can send files to Graphx on a disk, adding one extra day to the service.

\$49 for the package, \$10 per slide. Kaypro PC and 286i. Graphx, Inc., Searles Building, 41 Pleasant St., Methuen, MA 01844; (617) 975-5424.

Generating quizzes

Qwiz Writer is an exam-writing program for teachers. Users can type in questions in any format: true/false, multiple choice, essay,

matching, etc., and can make up a final test by selecting questions from previous tests.

They can choose any number of questions from earlier tests, and in random order. The final test can be sorted several ways, allowing different versions.

Qwiz Writer will print out tests along with their answer keys.

Free updates are offered for one year from date of purchase.

\$49.95. Kaypro CP/M and DOS computers. Hurd Computer Systems, 6330 Lincoln Ave., Cypress, CA 90630; (714) 220-2729.

Paper parking

The Brother M-1709 dot-matrix printer includes a new feature—"paper parking." This feature allows the user to switch between fanfold paper and single sheets without having to manually remove the fanfold paper. The printer automatically reverse-feeds fanfold paper and holds it in the tractor away from the platen. The user can then print on individual sheets or use the optional cut sheet feeder (SF-40).



Other features include a built-in rear-feed tractor, a front control panel for selecting printing options, and a printing speed of 240 cps. The M-1709 also includes both Centronics parallel and RS-232C serial interfaces.

\$699; cut sheet feeder \$149. Brother International Corp., 8 Corporate Pl., Piscataway, NJ 08854; (800) 526-3537.

Drive cleaners

Disk drive cleaning kits—the DDC 301 for 3-1/2-inch drives and the SCK5.25 for 5-1/4-inch drives—help protect your software and

hardware. Periodic head cleaning helps prevent read/write errors.

The kits contain a cleaning disk (usable up to 15 times per side), and quick-drying head cleaning fluid (residue-free). The 5-1/4-inch disk is made to accommodate either single- or double-sided drives.

\$6.95 for the SCK5.25, \$7.95 for the DDC 301. Ohm/Electronics, Inc., 746 Vermont St., Palatine, IL 60067; (800) 323-2727.

Recipe keeper

The Recipe Writer Pro is a recipe management and pricing system for food professionals who need help organizing their recipes, ingredients, recipe references, and notes.

The automatic linking feature lets users create sub-recipes and menus. Other features include category searches, which permit cross referencing; the "Food List," which combines many recipes into a single order sheet; and conversion to larger and smaller yields.

\$495, plus \$5 for shipping and handling. Kaypro DOS machines. At-Your-Service Software, Inc., 450 Bronxville Rd., Bronxville, NY 10708; (914) 337-9030.

Tax calculations

The Tax Reform Impact Analysis (TRA86) Lotus 1-2-3 template program will show how much taxes you will pay in 1986, 1987, and 1988 based on the new tax law, compared to what your taxes would have been in 1985.

The program provides a computation and comparison of the taxes of single taxpayers or taxpayers filing joint returns.

The TRA86 program uses the details of the new tax laws according to information released by the staff of the Joint Conference Committee as of August 29, 1986.

\$195. Monthly updates for \$50. Kaypro DOS machine with Lotus 1-2-3 (ver. 2.0). Research Press, Inc., P.O. Box 8137-P, Prairie Village, KS 66208; (913) 362-9667.

BDT's **LaserFeeder** is now being packaged with Blaser Industries' **Blaser** laser printer. With the feeder integrated into the Blaser, its operator has the option of selecting from up to three types of paper, plus envelopes. BDT Products, Irvine, CA □ The **ProWriter Jr.** dot-matrix printer has been upgraded to a speed of 120 cps in draft mode. The throughput has been increased from 44 to 48 lines per minute. C. Itoh Digital Products, Torrance, CA □ The newest update of **Marina Billing** is version 4 and includes a "flash-back" feature to view or print past tenant transaction histories. It also includes a revenue code feature, operator-installed statement messages, and recurring charge labels. Computer Consultants, Tiburon, CA □ **ProDisk Control 3.0** is a network-compatible DOS shell. New features include increased password protection, a printer utility, a command builder, and a new user's guide. Harvey, Fort Myers, FL □ The **Microline** dot-matrix printer has been enhanced with a speed increase, and it also now has four print modes, including a new high-speed draft mode. Okidata, Mt. Laurel, NJ □ The **dBx Translator** now contains a language translator for converting dBASE programs into C source code. The system allows conversion of dBASE applications for speed and improved performance. Desktop A.I., Westport, CT □ The statistical package **NWA STATPAK** has been updated to version 4.1. Enhancements include presentation-quality graphics capability, EDA (Exploratory Data Analysis), ANOVA, variable naming, runtime missing data handling, and survey analysis. Northwest Analytical, Portland, OR

Product Updates provides information about revisions of existing products. Users should contact vendors for more complete information and current prices.

COVER DATE INFO

Perhaps you've noticed that the cover date on this issue says December/January. This has been done so that *PROFILES* is able to fit in with the national newstand delivery schedule. *PROFILES* will soon be on some local newstand shelves.

Subscribers should note that this is *not* a combined issue. Subscribers will still receive 12 issues. The expiration date for each subscription has been extended one month. The mailing label on this issue should reflect that change; the expiration date should be one month later than the expiration date found on the November issue's mailing label.



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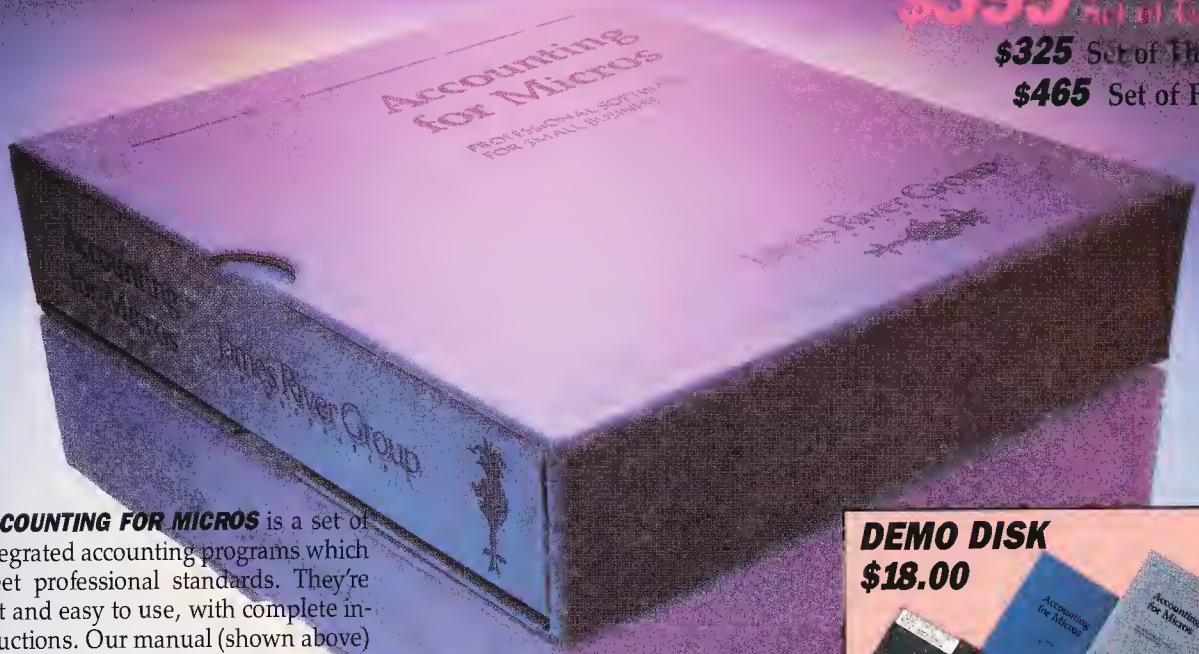
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